

Integrated Cluster Software Suite

Last Updated Monday, 24 March 2008

Basement Supercomputing has a simple goal:

You do the science, we do the cluster

As an educator, scientist, or engineer, your time is valuable. When using an HPC cluster you do not want to be wasting your time with cluster management issues. You want to use your HPC cluster to do science and engineering not administration. Sounds simple and logical. We think so.

Our approach is to provide you with an integrated turn-key software environment from which you can start computing right away. There is no need to write shell scripts, install software, create node images, consult mailing lists, or perform any other low level administration. We manage the software, you do the science. If there is a problem, we help fix it. It is that simple.

The Integrated Advantage

The following describes the key features of the Basement Supercomputing Baseline Cluster Suite. All software, including interconnect drivers and libraries are integrated with the OS environment and ready to use. The following features are supported:

- Single node management - the cluster nodes are managed from a single administration node. The entire node files system is dynamic and configurable.
 - Easy upgrade - the entire cluster can be upgraded in a matter of minutes
 - Diskless booting - fast reboots with support for local scratch and swap disks
 - Grid Engine Integration - configured and tested for PVM and MPI environments
 - Torque Integration - configured and tested for PVM and MPI environments
 - Tools Integration - all compilers and message passing middleware are integrated into environment modules allowing seamless uses of various libraries.
 - Custom Site Integration - all additional tools can be integrated and tested to work smoothly in your cluster environment.
 - Comprehensive Administrators Manual - written for administrators
 - Comprehensive User Manual - written for users and programmers
- Real Cluster Software Support - problems get addressed by qualified individuals

Comprehensive Cluster Support

Access to our support resources is available via email or through a web interface. Phone support is also available and can be part of all support contracts. We understand the end user and we are here to help. Our support staff has over thirty five years of experience with Unix/Linux and HPC systems. A copy of our support agreement is available for download.

Integration Beyond the Baseline

As experienced cluster users, we know that every site has its own unique needs. We also know that there is a subset of packages that is central to all HPC clusters. We have collected these packages into our Cluster Baseline Suite that is part of our comprehensive support package. Beyond the baseline suite, we can provide complete integration of the tools and applications you need to be productive. We deliver a seamless environment from which to work. And, because it is

supported, your environment remains stable as packages are upgraded and improved. Our options include, integration support for commercial compilers, parallel file systems, high speed interconnects, and application software. We provide full rpm installation support for Myrinet (GM and MX) and Infiniband OFED

Baseline Software Install

The following packages are included in our baseline software install. Additional packages, per users needs can be added.

- Supported Linux Versions (contact Basement Supercomputing for details):

- Fedora Core 6-7

- cAos Linux

- Red Hat Enterprise Linux 4

- Warewulf Cluster Toolkit - Cluster administration and monitoring

- PDSH - Parallel Distributed Shell for collective administration

- Sun Grid Engine 6.1 - Resource Scheduler

- Torque - Alternative/Optional Resource Scheduler (previously Open PBS)

- Ganglia - Cluster Monitoring System

- GNU Compilers (gcc, g++, g77, gdb) - Standard GNU compiler suite

- Modules - Manages User Environments

- PVM - Parallel Virtual Machine (message passing middleware)

- MPICH - MPI Library (message passing middleware)

- MPICH2 - MPI Library (message passing middleware)

- LAM/MPI - MPI Library (message passing middleware)

- OPEN-MPI - MPI Library (message passing middleware)

- ATLAS - host tuned BLAS library

- FFTW - Optimized FFT (2-MPI,3) library

- FFTPACK - FFT library

- LAPACK and BLAS - Linear Algebra library

- GNU GSL - GNU Scientific Library (over 1000 functions)

- Userstat - a "top" like job queue/node monitoring application

- Beowulf Performance Suite - benchmark and testing suite