SGI™ Linux® Advanced Cluster Environment

Features
- Capability (Beowulf-style) cluster
- Throughput cluster
- Cluster management tools
- Managed service for quick install

SGI Linux Advanced Cluster Environment [ACE] provides the industry’s leading compute cluster environment on Linux by integrating various open-source and vendor-developed components.

SGI Linux ACE is a fully tested and integrated cluster package for compute-intensive environments. In cluster taxonomy, ACE is a comprehensive software package used to build the following types of clusters:

1. Capability clusters address huge problems, which need to scale to multiple CPUs. It is more efficient and economical to solve some of these problems in a cluster environment than on a large single system.

2. Throughput clusters run multiple jobs (either different applications or multiple instances of the same application) in a batch-style environment.

Cutting-Edge Cluster Environment with Low Total Cost of Ownership
SGI Linux ACE eliminates the need to identify, download, and integrate available clustering software from the Internet. Each component of ACE has gone through intensive testing in SGI’s cluster engineering labs to ensure the interoperability and functionality of the whole package. Best-of-breed cluster software has been assembled from the open-source community and commercial vendors (including SGI developed software) to create a robust clustering environment to address your toughest problems.

ACE is nimbly structured to adopt the latest research coming out of the Linux cluster community. As a key contributing member of the open-source community, SGI engineering works with key research groups around the world to integrate the latest innovations into ACE while making sure that these new components are production-ready. SGI Linux ACE will keep you on the cutting edge of cluster technology while significantly reducing your cost of innovation.

Award-Winning Support and Service
SGI Linux ACE is backed by SGI’s industry-leading service and support organization. SGI offers full support for this comprehensive cluster solution, including many of the critical open-source components. In addition, our design engineers act as your interface with the open-source community to help integrate your desired features.

An optional and extremely economical managed service gets your cluster up and running in a matter of hours after the components arrive at your organization. This includes installation and configuration of the SGI Linux servers and SGI Linux ACE. Your servers are mounted in racks, and all the networks and peripherals are optimally wired and tested for functionality. The final component of the installation service is training for your staff on the components of the overall solution.
In addition, for your most demanding needs, SGI’s Global Services organization offers comprehensive service to tailor SGI Linux ACE and other hardware and software components to your specific problem. SGI Global Services engineers can even help you tune the performance of your application on an SGI cluster.

Components of SGI Linux ACE
In order to match the breathtaking pace of innovation in Linux clustering space, the components of SGI Linux ACE will evolve over time. The following is a brief description of some of the key components integrated in the initial version of ACE.

Programming Environment
ACE includes a programming environment required to run applications across multiple servers. The package includes MPI, currently the most popular API for parallel programming in a cluster environment. ACE will also include optimized drivers and libraries for fast execution of MPI on selected hardware. In a future version ACE will also include some parallel development tools like parallel debuggers.

Cluster-Wide Resource Management Tool
This tool provides for an optimal spread of computational load onto hardware and software resources available on a cluster. Jobs get submitted on a head node, which schedules the job when appropriate resources become available on compute nodes. In addition to optimal resource management, this tool provides a unified interface for job submission even in a heterogeneous hardware environment.

Cluster Management Tools
One of the big challenges in a cluster environment is the ability to manage the cluster as a single entity rather than as lots of small entities. Although managing a cluster in many ways will be more difficult than a single server of the same size, innovation in various management tools has significantly bridged the gap in management complexity between the two.

ACE provides the consoles of all the servers in the cluster on one designated management node. The management node also has the ability to remotely issue a reset to any of the other nodes on an as-needed basis. The ACE install manager enables the cluster components to be installed and configured from the management node, significantly cutting down the time to install software on all of the nodes in a cluster.

SGI’s performance management tool Performance Co-Pilot™, another integrated component of ACE, provides an extensible framework for centralized management of performance across the nodes of the cluster. Performance visualizations, archive creations, and replay and a single API for accessing the performance data combine to assist with quick identification and elimination of bottlenecks in the cluster.

Going forward, new SGI developed technology and components from open-source communities will be integrated into SGI Linux ACE. These technologies will aim to improve performance of clusters, make them more manageable, and enable a new breed of applications to run on Linux clusters.

SGI Linux Advanced Cluster Environment brings together SGI’s heritage in scalable-computing products and services with the latest developments from open-source communities. The integrated packaging combined with the support and service offerings provides you with a ready-to-go Linux cluster solution for your production applications.