Achieving High Availability in Cluster Computing

High Performance Computing (HPC) is a significant enabler in the process of Scientific Discovery. While cluster computers are the low-cost computing workhorses in such environments, node failures can impede progress. The acknowledgement of this problem has led to the development of High-Availability Open Source Cluster Application Resources (HA-OSCAR) whose goals are to strive to eliminate single points of failure in the cluster resulting in reduced downtime for cluster computers. Summer research goals focus on the combination of cluster and HA computing as applied to HPC. The first goal is to construct a high-availability cluster from commodity workstation class computers. This will be accomplished using the OSCAR and HA-OSCAR packages. The secondary goal of this effort is to gain a thorough understanding of cluster and high-availability computing techniques and specifically the OSCAR and HA-OSCAR packages. A third goal is to evaluate high-availability Linux and to consider how the HA-OSCAR environment may leverage its features. The final deliverable of my research effort will be a paper outlining my discoveries and recommendations regarding promising techniques utilized in HA-Linux that may be useful in HA-OSCAR.

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