

## **Cluster Account Management Program: C.A.M.P.**

The Oak Ridge National Laboratory's Computer Science and Mathematics (ORNL CSM) Division uses high performance computing (HPC) to solve complex problems in several scientific areas including computational biology, computational material science, neutron science, and weather modeling. Currently, ORNL CSM employees utilize two types of HPC facilities: massively parallel supercomputers and high performance computing clusters (HPCC). This paper focuses on user account management of the latter facility, HPCC. On any one HPCC there consists of one or more groups of users associated with various scientific projects. As the number of users, groups of users, clusters and the complexity of the computations increase, systems administrators must manage these users in an efficient manner across the multiple clusters. C.A.M.P. addresses this issue and provides painless cluster user account management and remote access for system administrators. The Cluster Account Management Program tool is written in open source Python version 2.2. C.A.M.P has the ability to manage multiple clusters both locally and remotely. It hands HPCC system administrators one powerful command with capabilities which include adding and removing users from specific groups of users, mapping specific groups of users to specific clusters, creating, tracking, updating user's metadata, and disabling and enabling users in specific clusters with minimal effort from a single tool. HPCC system administrators need to keep vital information synchronized between all clusters, so Network Information System (NIS) packages are incorporated into the software to provide this necessary functionality. However, C.A.M.P is flexible enough so that implementation of the Lightweight Directory Access Protocol (LDAP) can be added with minimum difficulty. C.A.M.P uses an information repository of user metadata to maintain persistent user information, even if users are removed from NIS. C.A.M.P. achieves managing multiple clusters both locally and remotely by calling two application programming interfaces (API). The first is called Authentication and Authority API (AAPI) which accesses the NIS service and the second is called Database API (DAPI), which accesses the information repository of user metadata.

### **Category: Computer Science and Mathematics**

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