Building Cyber-infrastructure for the Biomedical Informatics Research Network

Philip M. Papadopoulos
Program Director
Grid & Cluster Computing
San Diego Supercomputer Center
USA

Abstract

The Biomedical Informatics Research Network (BIRN) is creating, extending, and deploying a production grid to enable groups of biomedical researchers to share complex and large-scale data. In this talk we describe the BIRN, its structure and overall Information Technology Structure. In addition we will describe the details of how the complete software stack is integrated, managed and deployed. The Rocks toolkit, originally designed for clusters has been greatly influenced by the deployment needs of BIRN, GEON, the OptIPuter and other large science-based grids. BIRN is funded by the U.S. National Institutes of Health and integrates science teams across more than 20 institutions to share and federate 3-dimensional medical image data. We will describe, within the context of BIRN, the challenges of ever-increasing data set sizes, software stack complexity, integration with other production grids, and overall system reproducibility.

Biodata

Philip Papadopoulos received his PhD in 1993 from UC Santa Barbara in Electrical Engineering. He spent 5 years at Oak Ridge National Laboratory as part of the Parallel Virtual Machine (PVM) development team. He is currently the Program Director of Grid and Cluster Computing at the San Diego Supercomputer Center. Dr. Papadopoulos is deeply involved in key research projects including the Biomedical Informatics Research Network (BIRN), OptIPuter, the Geosciences Network (GEON), the NSF Middleware Initiative (NMI), The National Biomedical Computation Resource (NBCR), and the Pacific Rim Applications and Grid Middleware Assembly (PRAGMA). He is also well known for the development of the open source Rocks Cluster toolkit, which has an installed base of 1000s of clusters. His research interests revolve around distributed and clustered systems and how they can be used more effectively in an expanding bandwidth-rich environment. Dr. Papadopoulos is a Co-investigator for the BIRN Coordinating Center.