

Facilities, Equipment and Other Resources

University Computer System. North Dakota State University (NDSU) is essentially the communications hub for the entire state of North Dakota. As the academic host site for the North Dakota Higher Education Computing Network (HECN), NDSU provides Internet connectivity for itself and most other colleges and universities in the North Dakota University System. In addition, NDSU is the gateway for the NSF-funded Great Plains Network, which is a high-performance, regional network supporting research in the earth sciences. The Great Plains Network is also the conduit to Internet2, of which NDSU has been a member since 1997. Furthermore, NDSU has the largest local area network installation in the state, consisting of over 6,500 data ports in 35 buildings. All campus building networks are served via 100 MB, full-duplex, fiber-optic connections although a wireless network initiative is well under way. In regards to platforms, NDSU runs several UNIX-based host systems; some of which include AIX on IBM RS/6000, Solaris on Sun, and DEC Alpha. The campus also supports more than 20 clusters of PCs and MACs that are connected to the campus network and the Internet. SAS, SPSS, R, Minitab, BMDP, and IMSL are the statistical packages that are available through the University system.

Center for High Performance Computing. As discussed in the Intellectual Merit and Proof of Concept Results section, the investigators will utilize the Center for High Performance Computing (CHPC) at NDSU for the computation of exact distributions and simulation studies. The CHPC was established in 2003 to provide access to secure, advanced scientific computing resources for the university's researchers and their private and public sector partners. In addition, the CHPC is a member of the Coalition of Academic Scientific Computation, a nonprofit organization of supercomputing centers and research universities that offer leading edge hardware, software, and expertise in high performance computing resources. In short, the CHPC consists of two platforms. The first is a 96-node (192 processor) distributed memory cluster while the second is a SGI Altix 12-processor shared-memory server. Both systems run a RedHat operating system and support the standard compilers (e.g. C, C++, and Fortran). Various open source software such as R can also be supported. A CHPC Advisory Council, which consists of eight faculty members representing eight different disciplinary areas, has been formed to advise CHPC administration on policy and procedures. To date, there are at least 76 enrolled users (22 faculty and 54 students and staff) representing 25 scientific projects.

Department of Statistics Computer Lab. The Department of Statistics (DOS) at NDSU currently houses a small statistical computing lab that is primarily devoted to graduate student research projects. In regards to hardware, the lab consists of six computers as outlined below.

- 2 Pentium 4 Dell Optiplex GX280s, 3.2 GHz with 1.0 GB of RAM and 160 GB hard drives, running Microsoft Windows XP Professional.
- 3 Pentium 4 Dell Optiplex GX270s, 3.2 GHz with 1.0 GB of RAM and 120 GB hard drives, running Microsoft Windows XP Professional.
- 1 Pentium 4 Dell Optiplex GX270, 2.8 GHz with 256 MB of RAM and 40 GB hard drive, running Microsoft Windows XP Professional.

The DOS statistical computing lab has access to the campus network, the CHPC, and the Internet. In addition, all six computers are outfitted with the following (relevant) software packages: Microsoft Visual Studio.net, SAS, R, Minitab, MixTeX, and Microsoft Office. The lab will be used

by research assistants for simulating, programming, analyzing data, tabulating/archiving results, and writing research reports/papers.

PI and CO-PI Office Computers. The offices of the PI and CO-PI are equipped with Pentium 4 Dell Optiplex GX280s, 3.8 GHz with 2.0 GB of RAM and 160 GB hard drives, running Microsoft Windows XP Professional. In addition, the PI also has a Sun Ultra I workstation which runs Solaris 2.8 under the Common Desktop Environment. The workstation has 320 MB of memory and 4 GB of disk space. Once more, access to the University computers/software, the CHPC, and the Internet is made available through the campus network. The PI's Dell machine is outfitted with the following (relevant) software packages: Microsoft Visual Studio.net, SAS, S-PLUS, R, Minitab, Mathcad, MixTeX, and Microsoft Office. The CO-PI's machine is essentially equipped with the same software, minus Microsoft Visual Studio.net, S-PLUS, and Mathcad.