

AbstractID: 1699 Title: BEAMnrc and DOSXYZnrc calculations in parallel on a heterogeneous network of Linux and Windows workstations

It is a well known fact that Monte-Carlo calculations may require a huge amount of processing power. This processing power is typically achieved by using several computers in parallel. The computer park in our department is composed of two linux workstations, on which BEAMnrc and DOSXYZnrc are installed, and many more (~25) windows 2000/NT/XP workstations. We describe here our attempts to make maximum use of the available processing power, including windows computers. Several elements are involved for the achievement of this goal. The Cygwin environment is used in order to allow BEAMnrc and DOSXYZnrc executables to be built and run on windows. Since no suitable batch submission system for the windows environment, such as NQS, was available, job submission and dispatching is performed by a home-made system written in Python, a multi-platform high-level general-purpose programming language. The heart of our system is a server which receives job requests from users and dispatches sub-jobs on the various workstations. Each workstation runs a daemon (on linux) or a service (on windows) that accepts job requests from the server. The division of a large job into several smaller jobs ensures that all computers are kept busy regardless of their workload or speed. We have found that our system increased our Monte-Carlo processing power by a factor near 25, while being minimally invasive in term of installed software for the workstations involved. Moreover, the low-priority assigned to Monte-Carlo jobs ensures that they run in an imperceptible manner to the workstations' local users.