

Secure Peer to Peer Message Passing using A-JUMP

Programmers and researchers need an interoperable, synchronous and reliable working environment to develop high performance applications. MPI is a defacto standard for message passing for high performance parallel as well as for distributed computing environment. The static and homogenous model of MPI is not compatible with the dynamic and heterogeneous Grid environment. Therefore, it is difficult to run MPI enabled applications on Grids where availability of different type of resources keeps changing. There are not many implementations which offer message passing over the internet and Grids to use the computing resources in an optimal way. P2P-MPI and A-JUMP are MPI implementations which provide both point-to-point and collective data operations over internet using Java. However none of these MPI Implementations are categorized as a secure message passing implementation. It is a challenge to provide a facility of secure message passing without loosing the performance. In this paper we have proposed a model for secure message passing over the internet and Grids. The proposed model provides secure message passing using the currently available security techniques. It is based on A-JUMP. A-JUMP is preferred as it is based on a novel communication model for message passing called High Performance Computing (HPC) bus. HPC bus focuses on the resource integration for high performance computing in a secure and an efficient manner. This paper also presents Performance analysis and comparison of the proposed model with different MPI implementations.

Primary authors : Mrs. HAFEEZ, Mehnaz (SZABIST, Islamabad Campus) ; Mr. ASGHAR, Sajjad (NCP, Islamabad)

Co-authors : Mr. MALIK, Usman Ahmad (NCP, Islamabad) ; Mr. REHMAN, Adeel-ur- (NCP, Islamabad) ; Mr. RIAZ, Naveed (SZABIST, Islamabad Campus)