Topic 12
Routing and Communication in Interconnection Networks

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Topic Chairpersons

We would like to welcome you to the Euro-Par 2001 topic on Routing and Communication in Interconnection Networks. The selected papers, the corresponding presentations as well as the interaction with other researchers promise to be both useful and enjoyable. We also hope that you enjoy your visit to Manchester.

The Routing and Communication in Interconnection Networks topic is devoted to research about interconnection subsystems for parallel computers and networks of workstations. All aspects of communication, including topologies, routing, flow control mechanisms, deadlock management, network packaging and implementation, performance evaluation and network modelling, among others, were considered by the Programme Committee of this topic.

This year 11 papers were submitted to this topic. All papers were reviewed by four referees. The quality and range of the submitted papers led to a high degree of competition in the reviewing process. Using the referees' reports as the basis of discussion, the programme committee picked five of the submitted papers for publication and presentation at the conference. Three of them were selected as regular papers and two more as short papers. All of them were scheduled for presentation in one session on Thursday, the 30th of August.

The first paper by S. Loucif and M. Ould-Khaoua describes an analytical model able to forecast the behaviour of hypercube networks using deterministic routing in presence of hot-spots. The model's predictions are very close to those obtained by standard simulation. Therefore, this model can be used to obtain performance results of large networks that are infeasible by simulation due to the excessive computational resources needed.

The paper by R. Alcover, V. Chirivella and J. Duato presents a model to evaluate the fault-tolerance capabilities of direct interconnection networks. Using a methodology based on Markov chains, the authors can accurately compute the network reliability behaviour. The model is applied to the popular 2-D mesh and takes into account the network size, the routing algorithm and the rates of failure and repair.

The paper by L. Fernández, J. M. García and R. Casado deals with dynamic reconfiguration techniques oriented to networks of workstations. Among the different alternatives, the authors evaluate the viability and performance of a methodology based on deadlock recovery. The paper shows that deadlocks may become very infrequent with few virtual channels and that misrouting can be used in order to reduce the number of lost messages.

The last two contributions of this session will be presented as short papers. The first one by A. Shahrabi, M. Ould-Khaoua and L. M. Mackenzie presents an analytical model for predicting latency of unicast and multicast communications in wormhole-routed tori. The second one, by A. Pietracaprina and G. Pucci, presents randomized and deterministic algorithms for many-to-one routing on two-dimensional meshes.

In closing, we would like to thank the authors who submitted a contribution, as well as the Euro-Par Organizing Committee, and the scores of referees, whose efforts have made this conference, and the Routing and Communication in Interconnection Networks track possible.