



PORTING A DISTRIBUTED OPERATING SYSTEM TO A SHARED MEMORY PARALLEL COMPUTER

Submitted by G.S.Atukorala, B.Sc.(Hons), M.S.
for the degree of Doctor of Philosophy
of the University of Bath

1990

55403



Summary

This thesis describes the porting of a distributed operating system, Helios, to a bus based, shared memory, parallel processing computer. Helios design was originally based on a distributed memory, transputer network, connected via serial links.

After examining the design of distributed operating systems in general, the design issues and the implementation of porting Helios to a Motorola MC68020jMC68881 based, shared memory, parallel computer, are described.

Performance measurements that were taken on the new version of the operating system are then described. The results are compared with that of the original version and also with that of the Tripos operating system. Running a parallel programming application to test the efficiency in utilizing the available parallel processing power is also described.

Finally, future work is suggested, particularly in the areas of inter-processor communication, the use of shared memory and porting Helios to other processors.