

My DIC file.

SCIENCE AND ENGINEERING RESEARCH COUNCIL
RUTHERFORD APPLETON LABORATORY

COMPUTING DIVISION

DISTRIBUTED INTERACTIVE COMPUTING NOTE 908

Performance Comparison of Unix Machines

Issued by
Alan J Kinroy

17 October 1983

DISTRIBUTION: A J Kinroy
 R W Witty
 L O Ford
 E V C Fielding
 C P Wadsworth
 W P Sharpe
 D A Duce
 G P Jones
 D R Gibson
 S T Frost
 P J Smith
 H K F Yeung

This paper gives tabulated results of running a permutations program on different Unix machines.

1. The program

My program generates all string permutations of a given length out of a set of ten letters. It is written in C and makes heavy use of recursive procedure calls and calls to malloc. For a comparative test I ran a shell script as follows :-

```
perms 5 | wc -l
```

This generates 30240 5-letter permutations each on a separate line and pipes the output into wc -l.

To time the results I used the unix command time which gives real (elapsed) time, user time and system call time. The total of user and system time gives the execution time of the program, real (elapsed) time is a measure of how heavily loaded the machine was when the program was run.

2. Results

UTS 1 other UTS user

real	10.576
user	5.514
sys	0.115

11/70 2 other users

real	1:51.0
user	48.5
sys	5.7

VAX 750 1 other user

real	1:24.0
user	1:19.7
sys	1.4

PERQ/PNX no other processes

real	2:18.0
user	2:11.7
sys	2.6

11/34 no other users

real	3:00.0
user	2:20.7
sys	6.3

3. Conclusions

As this is only a one-off test run with different process loads on each machine no firm conclusions can be drawn. However if this performance difference is maintained for general Unix usage UTS appears to show a very significant performance advantage over Version 7 on the 11/70.

The VAX 750 was about 1.5 times slower than the 11/70 for execution time on this example and the PERQ was more than 1.5 times slower than the VAX. The 11/34 had a comparable execution time to the PERQ.

I am impressed with the performance of UTS but cannot help wondering how fast it would run if it was implemented directly rather than on top of a CMS virtual machine.