

ms file

SCIENCE AND ENGINEERING RESEARCH COUNCIL

RUTHERFORD APPLETON LABORATORY  
COMPUTING DIVISION

D I S T R I B U T E D   C O M P U T I N G   N O T E   6 1 5

VISITS

issued by  
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Notes on a meeting with Dr K H Bennett  
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1. INTRODUCTION

The purpose of the meeting was to discuss a forthcoming grant application. Keith's present grant expires in September 1982.

2. CURRENT WORK

The Cambridge Ring at Keele is performing well. Machines connected include a Pascal Microengine, Terak, 2 LSI-11's and a PDP11/34. The 11/34 suffers from kernel space limitations. The LSI-11's run a distributed filestore.

Throughput with program interrupt access logics is limited to about 6K bytes per second. Keele have developed on access logic based on a Z80 SBC which supports basic block protocol (type o blocks actually) in hardware. Effectively the critical software loops have coded in TTL, so that packet handling is done in TTL and message handling is done in software. There is a DMA link between the Z80 and Unibus (DRV-11). The access logic has also been linked to the Computer Centre's GEC machine through a Digital I/O board. The JNT support the Computer Centre experiment. A working adhoc link from the Ring to the GEC (hardware and software) now exists. Component costs for the access logic are about £1700. Midlectron have shown some interest in this development.

The terminal multiplexor is also now working. It has a logic limit of 64 channels and physical limit of 44. Support for scheduling is provided in hardware. The assumption was made that input speed would not exceed 9.6K bps. Not enough channel cards have yet been completed to know what the throughput limit is. The mux is being used in the microprocessor laboratory as a switching node between 16 RBC micros and an 11/23 file server running Unix. Keele are pleased with the BBC micro.

### 3. GRANT APPLICATION

Keele are keen that the ideas they have developed in the present project should be applied for the benefit of the common base effort in a sequel project.

Rob and Len explained the PERQ Unix project.

1. PERQ will have 32 bit paged V7 Unix.
2. The Unix kernel is being discarded, the system is being implemented on the CMU Accent kernel.
3. Unix is being mounted on the existing PERQ filing system so that it is easy to move between Unix and POS. However this means that there are no inodes etc. Reads and writes work as system calls which are translated into Accent calls.
4. The file system is being phased out in favour of the Spice filestore.
5. CMU are unlikely to produce an operating system before 1985. The target in the UK is to have 200 PERQs fully networked nationwide over the next few years.
6. The Spice file system will be based on a large central fileserver and local file servers interacting with the central fileserver. The local fileserver is almost finished. The central fileserver is designed, but not yet coded.

The strategy of Keith's project plan is fine, but the details will have to be reworked as they rely on the existence of internal Unix datastructures which will not be present in the PERQ implementation.

The proposed structure for the PERQ Unix implementation was described in some detail and it would seem that what Keele wants to do would be fairly straightforward. It would be possible to run a pure Unix filesystem as in partition of the PERQ disc if so desired.

There is a strong practical need for a distributed filestore in Unix.

Paul Singleton expanded on some ideas he has to make the Unix filesystem more secure, for adding block insert and delete, for locking and secure update so the system cannot deadlock. He also explained an idea for a new approach to files based on the idea that a file is a recursive tree of records (in which fixed record size limitations disappear).

The Keele group will reconsider the details of their application. They are keen to do something that would be generally useful.