REPLACING AN HP 3000 SERIES II WITH AN HP 3000 SERIES 33

presented by Ken C. Nutsford
            Managing Director
            Timeshare Systems Ltd
            New Zealand.

1. INTRODUCTION

1.1 Background

The first HP 3000 general purpose computer system in N.Z. was purchased by Timeshare Systems Ltd and installed in August 1977. Extensive evaluation of minicomputer equipment available and supported in N.Z. by manufacturers' suppliers had been undertaken since the end of 1976. This HP 3000 Series II was sold under an OEM contract to a company set up to operate a timesharing computer bureau. The company became the first computer bureau to use an HP 3000 in N.Z. or Australia. Several companies have since followed this pioneering trend.

1.2 The Author

Ken Nutsford has spent fourteen years in the computer industry specialising in project management for business systems. A background in operations research has been used to develop the computer as a tool for management and to seek ways to optimise the return on investment in computer equipment and software.

1.3 The Company

Timeshare Systems Ltd was formed in 1973 as a company to investigate the feasibility of developing timesharing services to meet the needs of small and large users in having access to interactive processing facilities from their own office premises. It was determined that the minicomputer provided the best cost effective solution for terminal communication but that it lacked the system software to give total resource management under a single all embrassing operating environment. The freedom of each individual terminal user to have access to the resources of the computer on a shared basis where and when that user needed processing facilities, without being limited by other users' activities, was considered a mandatory requirement.

2. ON-LINE TIMESHARING NETWORKS

2.1 Resource Management

Timeshare Systems has built up considerable experience in the management of computer resources, particularly in the area of on-line networks. A feature of this resource management operation is that the client's computer system can be housed in Timeshare Systems office premises with communications facilities being available to link remote terminals to the computer. This centralisation of the heart of a computer network with the resource management company means that all responsibility for the operation of the network processing resources is with the network managers.

2.2 OEM Contractor

During the course of selecting Hewlett Packard as a supplier of computer equipment for a proposed timesharing service bureau, it became apparent that cost advantages could be obtained by Timeshare Systems for its clients by becoming an OEM contractor of HP computer equipment. Thus, in a practical way, Timeshare Systems was backing its recommendation for the purchase of equipment by making a tangible investment itself in a commitment to add value to that product. Thus, a working partnership was established with the benefits of two parties each specialists in their own area, one to supply intrinsically sound computer systems for round the clock processing of terminal networks, the other to provide practical computer skills necessary to bring equipment and software together in a functional unity.

2.3 Hewlett Packard N.Z.

The N.Z. operation for H.P. is at the end of the international chain and problems of remoteness impact in many areas. Delays in communications within H.P. affect planning and random external events can jeopardise the best planning at crucial stages. As a company, H.P. are considered very conservative in the marketplace. Timeshare Systems had to virtually sell H.P. the advantage of supplying an HP 3000 to the N.Z. market and this tendency is still apparent today. In N.Z., HP are still known as a company producing quality electronic equipment and pocket calculators.

3. THE HP 3000 FAMILY OF COMPATIBLE BUSINESS COMPUTERS.

3.1 Series II and III

From August 1977 through to August 1979, Timeshare Systems managed an on-line timesharing network operating on an HP 3000 Series II. The system was initially installed with 192K bytes of memory, a 50M byte disk drive, an 800 bpi magnetic tape drive and 16 terminal ports. During the two years it expanded to 384K bytes of memory, 2 x 50M byte disk drives and a 120M byte disk drive, with 32 terminal ports. The release of the Series III removed the limitation of 512K bytes of memory by providing expansion to 2M bytes. A migration path from Series II to Series III is provided by HP thus protecting the initial investment made in the Series II.

3.2 Series 33 and 30

The release of the Series 33 and 30 provided the HP 3000 in a smaller version, limiting the memory expansion to 1M byte because the CPU speed was half that of the Series II and III. The systems differ only in performance and expandability, each providing a full range of peripheral options and access to HP 3000 systems software. To protect customers investment in the HP 3000, the Series 33 and 30 feature totally compatible system software and application programs are transparent to the Series II and Series III. HP's stated policy is that "applications developed on one HP 3000 system can be executed on any other HP 3000 system without modification or recompilation".

3.3 Optimising Equipment Purchase

During the first quarter of 1979, Timeshare Systems was requested to evaluate the purchase of an HP 3000 for two clients using six ports on the on-line timesharing network. The requirement was to protect the existing investment in terminal equipment and applications software with the capacity to handle 12 ports. Three possibilities were available at the time, the choice of a Series II, Series III or Series 33. An evaluation showed a Series II or Series III with 256K bytes of memory, a 120M byte disk drive and an 800 bpi magnetic tape drive had the capacity to cope with existing volumes and terminal processing demands, while a Series 33 with 512K bytes of memory, a 120M byte disk drive and a 1600 bpi magnetic tape drive compensated for the slower speed of the CPU and equated to the Series II and III configuration. On the basis of complete transparency between the Series 33 and Series II, a Series 33 was recommended on a cost performance basis. Timeshare Systems recommendation for a Series 33 was accepted by the two clients and an order eventually confirmed by HP for delivery in July 1979.

3.4 Continuity of Processing with Future Expansion

A company with on-line interactive application software is dependent on the computer to run its business on a day by day basis. When planning to change over from one computer to another it is imperative that the continuity of procesing is maintained with the minimum of disruption. Where this changeover is from a service bureau to an in-house facility, it is important that there is adequate room for future expansion to cope with the inevitable increased demand for access, implementation of new systems and growth in data volumes. The Series 33 contains new technology and although its expansion is currently half that of a Series III in terms of memory and terminal ports, HP's future development is with the Series 33.

4. EXPECTATIONS OF THE HP CUSTOMER

4.1 Hardware

A user of an HP 3000 Series II has developed a working set of functional requirements and performance which must be at least maintained and enhanced in changing from one model of computer to another in the HP 3000 range. Thus the computer is a central black box with the user expecting a defined result from the different inputs to the black box.

4.2 Software

4.2.1 System Software

The fundamental operating software and compilers common to the HP 3000 range allow the user the same set of working tools irrespective of the processing unit. Thus the user is expecting independence from the central black box.

4.2.2 Application Software

As application software has been developed and is operational, the users independence of the processing unit in the HP 3000 range provides a transparent environment for the application software to function without any modification or recompilation.

4.3 Performance

The distinguishing feature between the central processing units of the HP 3000 range is the speed of processing. The Series 33 and 30 provide half the processing power of the Series II and III. To maintain throughput of data volumes and processing capacity in changing from a Series II to a Series 33 the difference in speed can be compensated for by allowing a larger main memory to reduce the dependence on virtual memory. Also, migration from an 800 bpi tape drive to a 1600 bpi tape drive is an additional benefit accruing from necessity as the 800 bpi tape drive is not supported on the Series 33 or 30.

4.4 Operating Environment

With the HP 3000 family of compatible business computers differing externally to the user only in performance, the operating system interfacing the user with the central processing unit is the key to providing a transparent uniform environment. Irrespective of the way each central black box functions, the user expects only to see an HP 3000 with uniform characteristics of operation.

5. LOGISTICS OF RE-EQUIPPING

5.1 Delivery

Obtaining a confirmed delivery date is a major requirement in the planning for a computer installation. External events can have more chance of intervening to cause disruption where long distances are involved in delivery of equipment between factory and user.

5.2 Installation

There is ample time available while awaiting delivery of the equipment to ensure that the computer room is fitted out electrically ready for the various units in the equipment configuration. The actual unpacking, installing and commissioning of the HP 3000 can proceed smoothly in half a day.

5.3 Changeover

Some planning is required to ensure the timing of a suitable cut off point in the current processing so that a full back up of all files is done onto whatever transfer media is being used to go between the machines. Complications can arise if an off-site conversion of tapes from one packing density to another has to be performed.

5.4 Maintaining Processing Continuity

It is essential that the new computer equipment is tested out with the application software after the HP Customer Engineer has completed the standard diagnostic checks. This simulation of the live operating environment can determine the degree of risk involved in cutting over to the new equipment. A contingency plan is essential in case the cut-over proves inoperable but it is far better not to have to implement any return to the original computer. The more surprises that can be brought to attention with the simulation of the live operating environment before normal processing is resumed, the easier it is to determine work-around procedures so that disruptions are minimised.

5.5 Acceptance

The acceptance of the system in working order is seen as an automatic procedure by the HP Customer Engineer once he has achieved satisfactory completion of the standard diagnostic tests. Under the purchase agreement with HP for the supply of equipment, HP undertake to ensure that the equipment performs to specification. However, it must be emphasised that the purchaser of the equipment or his resource manager is responsible for deciding under what conditions acceptance is signed off. Any conditions itemised on the acceptance form indicate a measure of the degree to which the equipment installed and functionally tested does not operate to the user's expectations.

5.6 Warranty

HP provide a three months warranty period on HP 3000 computer systems subject to certain terms and conditions of supply and use. During the warranty period HP replace or service free of charge any part or parts of the equipment which prove to be defective. This implies that within three months the computer system supplied will be functioning to specification. From the expiry of the warranty a maintenance contract ensures the system is kept in functional order, assuming it is by this time up to specification.

5.7 Communication

The responsibility of ensuring the HP computer equipment and system software is installed and functions correctly belongs to the HP Customer Engineer. It is important that meaningful communication is established with this person if system malfunction is to be minimised. The HP Customer Engineer is at the end of a long communication chain back to the HP lab and the remoteness can be a costly and frustrating one for the HP 3000 installation coping with processing problems attributable to faulty design.

6. POST-INSTALLATION FUNCTIONS

6.1 The Role of the Resource Manager

The Resource Manager is not the scape goat for the equipment supplier or the computer user. The Resource Manager provides the all important interface between equipment and software to bring about a desired end result, that of utilising computer resources to maximise the benefit to the end user. By adopting a pragmatic approach to operational problems a vital role is fulfilled in ensuring the various facits of a computer network are kept operational.

6.2 The Role of HP Account Management

HP Account Management is divided into three, representing the lines of vertical integration followed by HP internally. The HP Sales Representative from the Computer Systems Group does not have full account responsibility as this is shared with the Customer Service Group and Administration. The lack of a General Manager at area level to control the three functions creates a management communication problem within HP. The HP Customer inevitably finds it necessary to have to direct and administer the HP Account Management to achieve the desired performance results from HP.

6.3 The Role of the User.

The user of HP equipment is dependent on the hardware/software environment being operative when he needs processing resources. With an on-line timesharing network, this means round the clock availability and reliability. The chance of catastrophic failure of equipment must be kept as low as practical by the use of intrinsically sound equipment, and the system software must be robust to minimise the occurrance of system failure. If performance is not up to expectation, the user looks to the Resource Manager for the identification of problem areas and the instigation of the necessary action to correct malfunctions. No more than two hardware failures per year are expected where the system is inoperable without HP Customer Service intervention.

7. PROTECTING THE COMPUTER INVESTMENT

7.1 Short Term Requirements

Ideally the computer resources available should match the peak demand for their use. There is a trade off in being over-resourced to compensate for the growth in volumes and access requirements. A compromise is required to compensate for the lead time for ordering additional equipment. The availability of sufficient disk storage capacity is of prime importance in the efficient operation of on-line networks. Providing sufficient terminal ports for access and main memory to ensure an adequate response time is achieved, as the load increases, needs monitoring. Maintaining the right balance between all three areas of resource utilisation is a continual process.

7.2 Long Term Requirements

Business is a collection of interrelated dynamic processes and any dependence on computers necessarily requires that the computer environment used can respond to changing conditions. This means growth in capacity is important so that the horizon is away in the distance. If the computer system reaches the limit of the horizon it is essential to have a means of going beyond the horizon by linking in extra processing units or replacing the central processing unit with a more powerful one. The more fundamental building blocks available, the greater the degree of freedom for meeting long term computer processing demands.

7.3 Factors Influencing the Return on the Computer Resource Investment

The balance of short and long term requirements is achieved by planning for the following:

1. Protecting the investment in computer equipment.
2. Protecting the investment in application software.
3. Protecting the investment in support personnel.

8. CONCLUSION

8.1 Working with HP Equipment

The experiences gained with HP equipment can be summarised as follows:

1. The premium price payed when purchasing HP computer systems provides intrinsically sound state of the art equipment with reduced maintenance costs.

2. The investment in hardware and system software is maintained by the HP 3000 family of compatible business computers to a high degree.

8.2 Working with HP

The experiences gained with HP as a multi-national company can be summarised as follows:

1. A very conservative approach to business adopting a no-risk profile in the market place.

2. The customer buys equipment from HP, it is rarely sold.

3. Administratively incapable of providing the customer with the level of communication necessary to achieve a balanced and smooth working partnership. Active direction from the customer is necessary to obtain timely information and ensure the required actions are taken.

8.3 Working with the User

As Resource Managers we are dependent on achieving results for the computer user through HP. The main requirement is to give the user an appreciation of the timescale within which HP functions so that the need to plan ahead is developed. To a user, the Resource Manager is only as effective as the quality of support provided by HP in supplying and maintaining equipment to the level expected by the user.