FACILITIES MANAGEMENT -- A VIABLE ALTERNATIVE

Jack Neale
Brant Computer Services Limited
2740 Queensview Drive
Ottawa, Ontario   CANADA
K2B 8H6   (613) 726-0004

"What skills are required to manage and operate an HP3000 minicomputer? Where do I find people with these skills? And what is the most cost-effective way for me to acquire that level of expertise?" These are the questions facing the purchasing departments and managers of organizations who have or expect to receive an HP3000.

A single HP3000 can now address the market of data processing requirements ranging from a few users on the Micro LX to more than 400 on the series 955. A network of such machines can, of course, expand that significantly. One thing that remains relatively consistent across this wide range is the set of skills necessary to manage the computer system(s). The frequency of demand on those skills changes depending on the processor and the resident applications; however, the basic ability to manage an HP3000 is independent of either of those factors. A system manager who is responsible for a single HP3000 Micro LX requires the same set of skills as the one who manages multiple spectrum series machines. Thus, the amount of time required to be dedicated to those tasks will vary.

The first question was *"What skills are required to manage and operate an HP3000 minicomputer?"* Let us take a look at the requirements of a typical system manager. The four basic categories are System Hardware, System Software, Data Communications and Administration. The environmental considerations are intentionally not included because they are not consistent across the HP3000 spectrum (no pun intended). Including this aspect with the system management functions is referred to as Facilities Management. However, the physical environment can be a topic on its own and is not included in this discussion.

I.   System Hardware

The system manager must be intimately familiar with the
capabilities and limitations of the hardware.   This is
essential to provide insight into current problems as well as
future expansion. Without this insight, you will be working
with a severe blind spot. This is not limited to only HP
hardware; knowledge of third party suppliers is equally
important to provide a solid foundation from which to make
recommendations.

Installing and configuring the hardware are basic skills that
are required by the system manager. With all the peripherals
that HP provides, some combinations of which are incompatible
or unsupported, a thorough understanding of the processor and
all of the potential peripherals is important.   In addition,
the effect of a configuration on performance is equally
important. There are many ways to configure the same set of
hardware, some of which are better than others in regard to
optimization.   Again, with third party hardware available,
this too provides other alternate solutions.

With full compatibility built into the HP3000 family of
minicomputers, hardware upgrades are a continual responsibi-
ity of the system manager. Hewlett-Packard's migration from
one series to another is as easy as any in the industry. But,
you still require a knowledgeable system manager to lead you
in the right direction and to facilitate the process.
Experience can minimize or eliminate those situations where
an upgrade could pose a problem. Proactive planning goes a
long way to avoid prolonged downtime during this process.

System performance is a topic on its own and there are many
professionals specializing in this area.   Suffice it to say
that an experienced system manager with an eye for optimiza-
tion is worth his weight in gold. Postponing that inevitable
upgrade for a year or two by squeezing your existing hardware
can save a company a considerable amount of cash as well as
provide the opportunity to delay the acquisition until·newer
technology is available.

Let us not forget another aspect of system management ...
recovery from system failures. Again, a person who can
recover, minimize the data lost, and get the system up again
in the shortest period of time can save your company direct

and indirect revenue. A seasoned system manager can react to and solve these problems without any lost effort to bring the system up quickly and smoothly.

All of these components stem from a complete knowledge and understanding of the hardware associated with an HP3000 computer. Timeliness is critical when it comes to most aspects of system management. A system failure is not the time to learn about the hardware. Without a sophisticated level of expertise and a knowledge of who to bring into the picture, a lot of time and many opportunities can pass you by in the meantime.

II. System Software

HP3000's are renowned for their complete set of system software that comes with the hardware. Whereas other vendors rely on third parties to provide database management systems, forms packages and other utilities, Hewlett-Packard provides them when you purchase your system. Although you can find other software that specializes in each of the utilities, the system software is adequate and, in the absence of other packages, can perform the required functions. Third party tools provide easier to use and more complete functions but not all systems are blessed with all of the packages to make system management easier. Innovative use of system software can achieve the same result, so a system manager must be fully conversant with all aspects of the tool kit graciously supplied by HP. You would be amazed at what a resourceful system manager can do without the use of specialized tools. Think of it as a blacksmith forging his own solutions without the help of a machine shop. Time is usually the trade-off but, under certain circumstances, this is acceptable. The point here is that your system manager must be able to fill in the holes between the third party tools with system software.

There are also the more routine aspects of system management that require a certain level of expertise in such aspects as HP3000 file and accounting structure, system security, UDC's, system logging, etc. To set up a system and keep it running smoothly requires a solid understanding of these concepts as well as the tools to manipulate them. You will also find that a limited knowledge of IMAGE, VPLUS, QUERY, etc. will

help your system manager work with software development people more effectively. Basic programming skills including logical and analytical thought processes can be considered an extra feature but they can become very valuable depending upon how demanding you are of your system manager.

Installation of software packages is usually straight-forward and a competent system manager can take that one step further to provide another perspective in an evaluation of software. What may appear to the end user to be an ideal package may have serious effects on performance or other system issues. An experienced system manager can identify these aspects and assist in a more complete evaluation. The same is true for upgrades to operating systems and third party software. The repercussions of blindly proceeding can be catastrophic. Again, a system manager can help to prevent such occurrences and can assist in correcting any temporary shortcomings. Your system manager should be your focal point for any software installations and upgrades to liaise between the end user and the supplier. A qualified system manager has an uncanny ability to understand both representatives and to sort out any misconceptions on either part.

III. Data Communications

Depending upon your environment, data communications can be a never-ending source of despair for any system manager. Continual troubleshooting is a fact of life and a very time-consuming process. In addition to the unreliable performance of most networks are the continual advances in technology. Keeping up-to-date with new releases of data communications equipment is a difficult chore. It doesn't require a very sophisticated network to require the full time dedication of a data communications specialist in addition to your system manager. Planning for the future is increasingly difficult as product announcements are frequent in a very dynamic field. Again, a basic understanding of data communication protocol is essential for effective system management. It is a difficult area in which to become an expert unless you can devote all of your time to that one aspect. This is a perfect example of an area in which a system manager may choose to establish contacts in the industry to assist in his communications network. This ability of a system manager to know whom to contact to resolve what issues is another

important trait. Recognizing that he cannot be all things to all people in a field as large as data processing in the HP3000 arena is critical to the successful management of your system. Developing a network of specialists in each field outside of your organization is an effective method of addressing those issues that require very specific knowledge. A system manager must be able to develop those relationships with other people to assist in resolving problems that involve other suppliers.

Because data communications at this point is not an exact science, your system manager frequently finds himself in trial-and-error situations. Making terminal A with slave printer B access port C through a channel on a data switch D over a dedicated line E complete with multiplexors and modems can require some testing. Specifications for cables and configurations are not always available and some clever thinking is usually a necessity. These scenarios can bring into play many aspects of data communications and, again, there is no replacement for a system manager who can rely on previous experience, other contacts in the industry, and an analytical mind to find the solution. He must be able to break down a big problem into many components. Each aspect can then be set up and tested independently so that problems can be identified and resolved in small pieces. Decomposing large problems into many smaller ones is a necessary ability of a system manager.

IV. Administration

Performing the above three aspect of system management without the corresponding administration can cause serious side effects. Although the immediate needs will be met, the long term stability of the data processing environment depends on the system manager correctly and completely administering each aspect.

Production procedures and schedules are critical to the effective management of your system. The system manager must be able to document fully these procedures, complete with recovery instructions. Many organizations depend on the results of the previous evening's processing to perform their current workload.

User training of the HP3000 independent of the software application that they are using is another function provided by the system manager. The user must have a general understanding of the computer environment to appreciate its capability. Simple aspects like sessions/jobs, output priorities, users and passwords, etc., give the user the basic knowledge necessary to make the best use of the system.

Part of the service that your system manager should provide is some level of responsibility for ordering consummables such as paper, ribbons and toner cartridges. He has the best idea of when supplies are running low and you don't want to be missing an important report because you ran out of paper.

If your requirements dictate the need for other operations staff such as console operators, your system manager will have to train and manage these people. On-call support could also become part of the set of responsibilities -- again depending upon your production environment.

For any computer environment, there are contracts for maintenance, upgrades, trade-ins, etc., and your system manager should be the administrator. Establishing the level of support required and the sources for providing such service is the responsibility of your system manager. He has to work within the constraints of those contracts and should be involved in their negotiation.

As your computer system grows, you will require an inventory control to monitor upgrades, purchases and sales of equipment. Your system manager should be involved in these processes and should be responsible for providing the necessary information to the accounting people in your company.

Other duties that a system manager should perform include:

o initiating backup routines including offsite storage
o establishing regular meetings with user groups concerning current status and future planning
o providing technical support in proposals if you are in a service industry
o scheduling and assisting in preventive maintenance
o establishing a tape library and corresponding procedures
o attending user group meetings and reporting back any significant results.

The underlying skills that you are looking for in a system manager boil down to:

o   complete and thorough understanding of all aspects involving the hardware, software and data communications of your HP3000 system(s)
o   strong written and oral communications skills to work with a wide variety of people from end users to local management to third party suppliers
o   effective analytical skills to work through a wide range of situations in a systematic and logical approach
o   efficient time management skills to assist in working on many problems at the same time in a productive way.

The second question was *"Where do I find people with these skills?"*. There are three basic alternatives to this problem. The first alternative is to rely on consultants as and when required. The second is to have your own employee fill this position. You can either develop this person from a current employee or hire someone to fill this position. In either case, you end up at some point with a dedicated system manager as a permanent employee of your organization. The third alternative is to rely on a service bureau that specializes in the management of HP3000 systems. The biggest advantage of this solution is that you can effectively have the benefit of a dedicated system manager without the cost or responsibility of managing them.

The third question was *"...nd what is the most cost-effective way for me to acquire that level of expertise?"*. The first alternative is the best if your demand for a system manager is minimal. However, most system management functions require immediate action and the time required to find an available consultant may be prohibitive. The second solution is best if you require a system manager on a full-time basis. The third alternative is best if you require immediate access to a fully qualified system manager but not on a full-time basis. Most HP3000 system managers are capable of managing many systems concurrently. A service bureau can employ a full-time system manager and divide his expertise and the corresponding cost for that service over many systems. This reduces the cost of having such a person available without compromising the level of service. This does, however, add another component to your computer facility. The system would have to be at the service bureau's site

such that the system manager can manage many systems in the same location. This component could introduce additional costs such as data communications equipment but would also reduce the environmental costs compared to a local installation for the same economy of scale reasons as the system manager.

Before deciding which approach would work best for your organization, first establish your requirements in terms of the amount of dedicated system management time that you require. Once you have determined that and if a service bureau is a possibility, then ask them to outline the costs and benefits of providing such a service. There are other factors to consider in your decision and these factors will influence the route that you take. However, the key is to start with a fully qualified professional HP3000 system manager with the skills listed above. Beginning with this requirement will guarantee your success regardless of the option you choose.