HP ThinLan - A Users View
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The purpose of this paper is inform others of our experiences using HP ThinLan and an HP 3000 Series 68 as the server or host. The series 68 is networked to 25 IBM PCs in our micro lab. The paper will hopefully not be too technical but discuss how the network has been integrated into our computer services. It will cover the installation, management, advantages, disadvantages and some problems we have encountered primarily from the HP 3000 Series 68 side. It will address the configurations changes made to the Series 68, the performance of the Series 68 and the performance of the PCs.

Being a University we have a diverse set of computing needs. Our department provides support for academic computing done on the campus. The need of a local area network became apparent when our micro lab continued to expand. We were experiencing a decline in the use of the HP 3000 and an increase in demand for micro computing power and equipment. We had several PCs and wanted to be able to share resources as well as data between them. We still wanted to be able to use the PCs as stand alone machines and also as terminals connected to the HP 3000.   A Lan would provide these features and the sharing of resources such as printers and plotters we desired. HP ThinLan satisfied these needs and using the HP 3000 as the host also gave us the ability to backup all the PC files as we were doing our weekly and daily dumps.   We also gained the mass storage capability of our disc drives attached to the Series 68. HP ThinLan allowed us to make better use of the resources of our HP 3000, provide LAN services to our micro lab users, and have the PCs act as terminals for the HP 3000.

HP was helpful guiding us in purchasing all the hardware and software that we would need to network our lab.   Installation was done by an HP SE (Jim Gagliardi) and CE (Roger Brooks) on one long Friday afternoon. The HP 3000 had to be shutdown for the installation of the hardware, software and configuration changes. The HP 3000 had to have a local area network interface controller(LANIC) installed on the backplane of the machine. The LANIC is a microprocessor-based communications controller and is the link point for the HP 3000. The loading of the software and the configuration changes to the 3000 were done by the SE.   The customer has the responsibility of running the actual ThinLan coaxial cable between the host and the PCs.   There was a joint effort installing the hardware and software on the PCs. It does require that the PC case be removed and a card installed. A boot disk had to be created for each PC also.

Each PC requires an HP ThinLan server kit which consists of an interface card, BNC "T" connector and user software for the designated PC. The HP 3000 requires the following products: ThinLan/3000 link, UB-Delta-1 or later, Resource Sharing software, a LANIC, and a ThinMau(Thin Medium Attachment Unit) that connects the Lanic to the ThinLan cable. The installation of the Resource Sharing software was done from a tape by the SE. The configuration changes were required to identify an LDEV for the LANIC, virtual terminals were created to handle incoming data communication connections, and some new groups and accounts were required, as our system did not have the HP Office account. There are guidelines that you are to use to calculate values for some table entries on the system. The tables values on our system did require some changes.

In the Resource Sharing: Systems Management manual (32597-90001) there are a few chapters on preplanning your network. There are three people designated who should have input in the planning process. The System Manager, the HP 3000 Network Manager, and the PC Network Manager should decide how many PCs are to be connected as workstations, the printers that will be available to the network, and any other devices that you may want to share. The current table sizes must be evaluated to see that they are large enough to handle the addition of the network. This is one area where you should spend considerable time. We had a plan of what we wanted to connect and it appeared that our table sizes would be able to handle the increased demands of the network. I did miss one sentence regarding the increase demand for Global Rins. I also suggest that the original planning be set up for some expansion. We initially planned to connect 10 PCs. When we reviewed the table sizes we were within range for the 10. An additional 15 PCs were going to be added at a later date. We should have planned everything to be configured to handle 30 PCs. This would have given us the room to grow and still have a cushion beyond our maximum number of workstations. There is no stated limit to the number of active workstations that are attached to the network when the HP 3000 is used as the server. There is a limit to the number of nodes attached to the network. We were told that a ThinLAN cable segment can have a maximum length of 185 meters and that no more than 30 nodes can be placed on one segment. This can be expanded to three segments with repeaters. Using this as a guide any one Thinlan network could accommodate close to 90 PC workstations. There are some limits that you should be made aware of if you plan to use a "PC" as a server. These limits have increased and probably will change again before too long. You will probably want to keep a close watch on the use of the table values by the Tuner program or other system performance package as the network begins to be used. We saw a slow beginning followed by a rapid increase of use as our users became aware of the advantages of the network. The heavier the use of the network, the more resources will be required.

There are worksheets that are found in the Resource Sharing: System Management manual to help in planning your network. I strongly suggest that you complete the forms. This will take a lot of time but, will guide you in designing the structure of the network and will help your HP SE in configuring the system. Again give yourself some growing room. The amount of resources that you are setting up on the HP 3000 for the network should not cause a problem. We did expand the table values as our network use grew. Our user became dependent on the network, especially when they knew the default printer was a LaserJet Series II which was upgraded in the early spring to a Laser 2000. We were happy to see the use increase and moved up our addition of the other 15 workstations. We had originally planned to run the network on a Zenith 80386 based machine as the server. Using the Zenith as the server would have limited us to only 10 active users on the network for our version of Resource Sharing. The network still remains on the HP 3000 as we have been happy with the operation of the network in general. We still plan to place the Zenith machine onto the network as a server.

We have obtained the essential advantages we were looking for from a LAN and some that we feel are nice options. The network has allowed us to share printers and data between machines. With the network connected to the HP 3000, we also have gained terminals that we did not have before. Students and faculty can now upload and download files very easily. Students and faculty can backup their files that they have used during the semester on floppy diskettes or convert MPE files to PC files and vise-versa. All files are backed up daily and weekly with our regularly scheduled HP 3000 dumps. We have the mass storage capability of the HP 3000. Public domain software, shareware, and commercial software are readily available to the users of the network from a drive that is as easily accessible as an internal drive on the PC. If you intend to put commercial software on you network, request the network version. You will have problems if you do not have the network version and you will comply with the copyright laws of the products. A site license is another way to comply with protected software. The network makes it easy to insure that all parties are using the same version of software. It also helps when there is an update to a product. In our case, it reduced the number of lost and damaged diskettes.

There are some disadvantages that go with the network. The performance of both the HP 3000 and the PC will be discussed shortly. I will confine my remarks here to nonperformance types of problems. On our current version of the Resource Sharing and OfficeShare software there are some restrictions that are being addressed by later revisions. The limit of 10 active workstations on the network, if a PC is used as the host, was a problem for us. This was a factor in our choice to stay with the HP 3000 as the host. This limit is supposed to be increased in the performance version of the software. There is the limit on

the length of cable on the network which has not caused us any problems. Network software costs may be a problem if you have to purchase enough copies of a specific product to comply with the copyright laws in cases where a network version is not available. The manuals are not bad for a young product, but they could be a little more comprehensive. I dislike the reference to another manual that you usually did not purchase. It would also be nice if they would refer to a particular section or chapter in the other manual instead of the whole manual. I did purchase one additional manual; NS3000/V Network Manager Reference Manual, as it is referred to quite often. Our backups are done the first thing in the morning and the network is down during that time which causes some users problems. There is a limit of 1200 files on a shared disc that has caused our PC Network Manager difficulties. We have also noticed an increase in the number of files dumped daily. The network files are dumped if they are accessed.

Performance of the network has to be viewed from both the HP 3000 side as well as the PC side. As I said before, we were experiencing a decline in the use of the HP 3000 Series 68. We had the resources available to spare and the addition of the network has actually been a plus for our situation. We were able to use an existing resource to improve our overall services. I will admit that having the network has affected the response times of the HP 3000. This is especially true when a significant number of printouts are being routed over the network and when a PC is being booted onto the network. We boot the PCs on the network when the lab is opened in the morning and leave them connected unless there is an individual who wants to use the PC as a stand alone. The boot time to attach a PC to the network is long. This time averages less than 3 minutes for most of our machines, which usually occurs once a day. Applications are downloaded from the HP in the same way you would load an application from any hard or floppy drive attached to the PC. Since the LAN is transparent to the user, they do not have to learn new commands. This load time depends on the software package and overall system use. Once the package is downloaded there is a slight noticeable difference in its speed of operation if it has to access the network disk for more information. Our users have not complained about this slight decrease in response time. The initial download time is less than the time it would take the user to signout the package from the aid station and load it. The user does not have to wait in line for the aide to sign out the package or return it. Printing does take longer over the network. The files are printed in another room across the hall on a laserjet 2000, that allows us to monitor the printing. Since we give our users high quality printing, we have not had any complaints about the time it takes to print or retrieve it from across the hall. We could not justify a laser printer attached to each of the 25 PCs so we have no complaints. File transfer between the PCs and the HP 3000 on the network

is much faster than any other software communications package that we have.

Managing the system is done by a series of programs in the HP Resource Sharing product. Resource Sharing allows PC users in the office environment to share and save PC files on the HP 3000. It allows for printing of documents on the HP 3000 printers and backing up of PC files. Resource Sharing works with another HP product OfficeShare that is the PC side software.   OfficeShare links PC users on a network. Resource Sharing also permits a PC user to create shared discs files on the HP 3000, to use shared discs as extensions of their PC discs and allows the conversion of DOS format files to MPE format and vice versa.   Resource Sharing has a function key and command mode interface. Online help is available for most screens. The HP 3000 Network Manager uses Resource Sharing to create the PC shared discs on the HP. Shared discs on the HP 3000 have a structure similar to DOS tree structures with directories and pathnames. Access to files can be restricted to PC users and the files can have read/write/create attributes as well. There are 5 areas that you control   or   manage   from   Resource   Sharing.   Typing   (:RUN RESMGR.PPC.SYS;LIB=G) will   execute the program to enter this environment. Disc functions allow you to create shared disc and control access to these shared discs by other users on the network.   Configuration functions control the setup of the network parameters.   System functions give the Network Manager control of the Resource Sharing table configuration files and the creation/deletion of shared discs.   One more feature is the Diagnostic functions to monitor the network for problems or potential problems.   The use of these functions is limited by a users capabilities - SM (system manager), AM (account manager) and NM (network manager) are necessary to use many of the functions.

Files may be backed up 2 ways on the network.   The easiest way is the daily and weekly dumps done on the series 68. There is also a BACKUP command in Resource Sharing that allows you to dump only the network files.   These files can be recovered from either backup method by using the Recover command in Resource Sharing.

The file convert utility (:RUN FILECONV.PPC.SYS;LIB=G;NOCB) provides the user with the ability to convert from the PC DOS format to the standard MPE format or vice versa.   This utility also allows you to display your DOS directories and copy shared disc files.

A Print Spooler Utility is used to manage the network printing. This utility system (:RUN PSUTIL.PUB.SYS) allows users to monitor and control the print spooler.   PSUTIL is used to design the printing environment for the shared network printer devices. The print spooler supports both large and small printers, controls spool files, manages attended printers,and can recover or reprint spool files.   The spooling queues can be

viewed and priorities of spooled files changed. PSUTIL is also used to add, modify or delete print devices that are to be shared on the network. PSUTIL can be run in command mode or by function keys. The System Manager uses PSUTIL to start and stop the print spooler for various reasons such as backups. There is on line help available. We have two printers configured on the network and both are unattended. Once you have the printer devices configured you generally do not have to do too much with PSUTIL unless you have attended printers on the network. Attended printers require the supervision of an operator to respond to print request issued by the PC users.

The last program that I will take a quick look at is the NMMGR program(:RUN NMMGR.PUB.SYS). This program is required to be run the first time Resource sharing or NS/3000 has been installed on your system. I ordered the NS3000/V Network Manager Reference Manual (32344-90002) to have more documentation of what was happening with the network, since we do not pay for RCS support. The Resource Sharing System Management manual does refer to this manual and not having access to an SE or the response center I felt I had to have something more to rely upon when I had questions. The program has online help but is not as well documented with online help as some of the others. NMMGR enables the SM or NM to view more of the configuration files on the network. If you have an SE, you would probably want him to show you more about this program. I have not injured the system by poking around with it. The manual does explain the purposes of the network config files, catenets, bridges, and gateways. It is very interesting reading.

We are very satisfied with the HP ThinLan Network. The product has performed well. There are some problems as I have mentioned but, the advantages we have gained are significant. Our users like the availability of the software and printing. I like the ease of managing the product. Our PC Network manager likes the file storage capabilities of the network. We have less problems with diskettes being ruined or disappearing. The network has been reliable. We now have more workstations that can access our HP 3000. Use of the HP 3000 has increased. With all the benefits, we are willing to suffer some performance problems. HP already has released a performance version of the network software for UB-Delta-4 and up. Some of the performance problems have been resolved by the new release. HP has a good product in ThinLan.