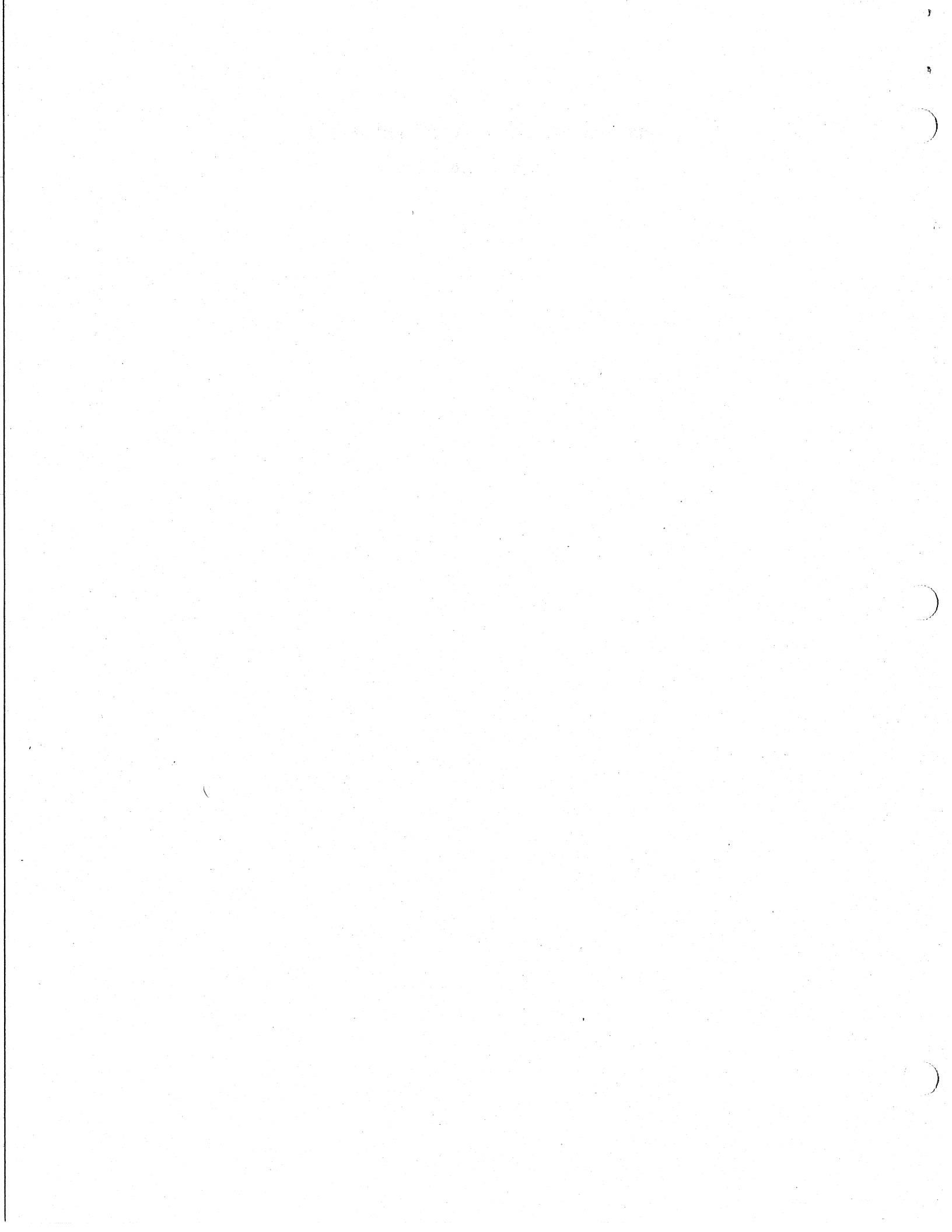


VMS AND VAXMATE SERVER INFORMATION
FOR PCSA V2.0



Subject: Performance results PCSA V2 vs Novell

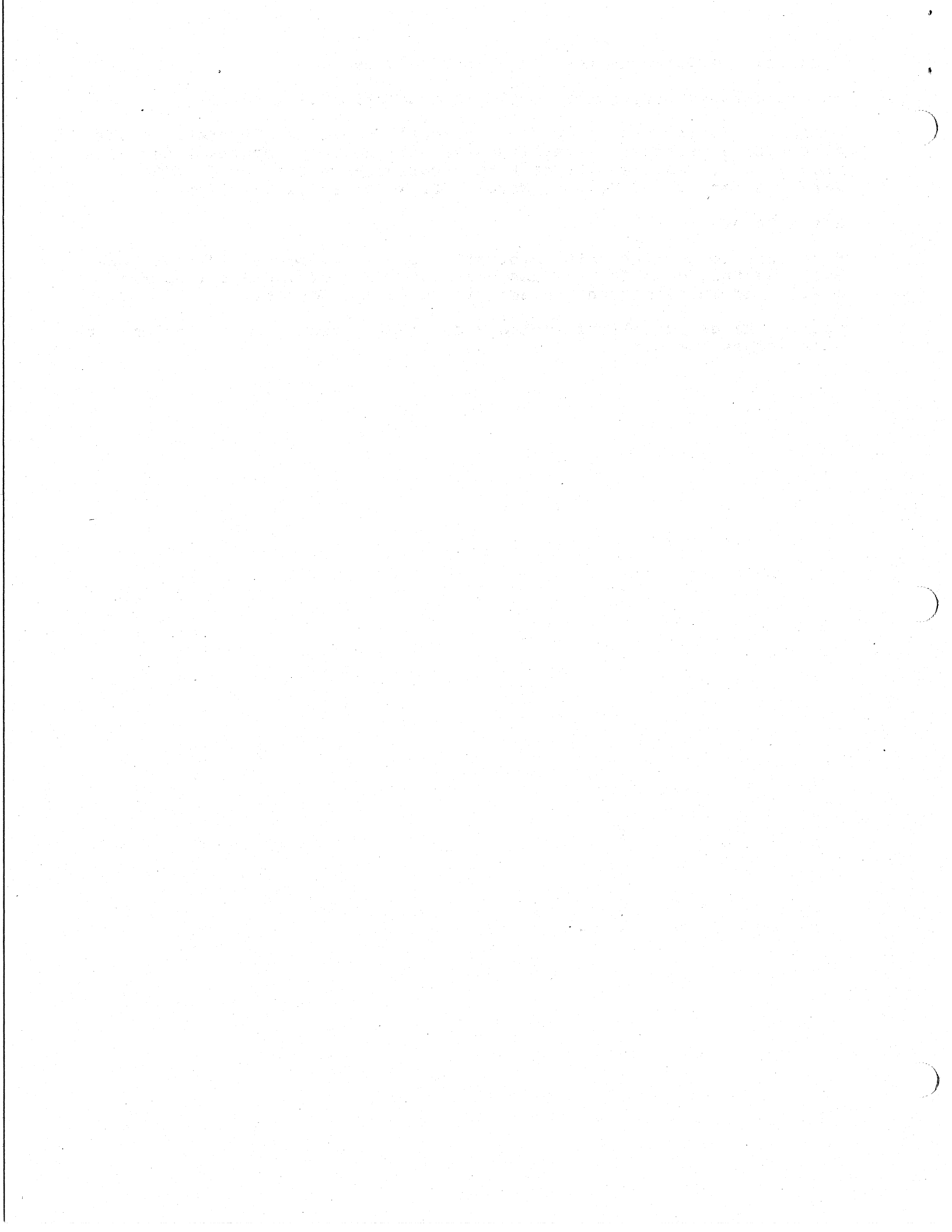
To: Integrated Personal Computing Introduction Task Force

Consensus during the Integrated Personal Computing ITF meetings was that competitive performance testing data will be very important for this product set. The results of PCSG's performance testing of VMS Services for MS-DOS V2.0 vs Novell SFT Netware are excellent.

See attached.

Plans are to publish this information in Sales Update. PR for PCSG will use this data for the announcement of V2 of VMS Services for MS-DOS and in subsequent PR activities as appropriate.

Note: The graph will be included for publication, but it couldn't be sent across the net.



I N T E R O F F I C E M E M O R A N D U M

Subj: Performance Tests: VMS Services for MS-DOS V2.0 vs.
Novell SFT Netware

1. SUMMARY OF TEST RESULTS

Testing was recently completed using VMS Services for MS-DOS V2.0, and Novell's System Fault Tolerant (SFT) Netware. Tests were performed on a MicroVAX 2000 and a Novell 80386-based server (T386). The number of attached PCs was varied from 1 to 32. The tests used simulated a typical PC operating environment, with a mix of activity associated with word processing, database management, spreadsheets and terminal emulation. The test results show that VMS Services for MS-DOS, in the configuration tested, is 30% faster than SFT Netware with 15 active users, and 12% faster with 32 active users.

Furthermore, the MicroVAX 2000 displays performance faster than a standalone PC/AT with hard disk at loads of 1 to 21 active users, whereas the Novell T386 is 15% to 25% slower than a standalone PC/AT with hard disk in the same workload range.

2. SERVER CONFIGURATION

The Digital configuration used for these tests consisted of a MicroVAX 2000 with 3MB of memory and one RD54 (159 MB) hard disk. The Novell configuration consisted of Novell's T386 server, an 80386-based machine running at 16 MHz, with 1 MB of memory and one 40 MB hard disk.

3. TEST ENVIRONMENT

The PCSG Standard Workload Model was used to exercise a number of IBM PC/ATs and compatibles, all running at 8 MHz. The PCs were connected to the servers using thinwire Ethernet.

The PCSG Standard Workload Model simulates the activities of both professional and clerical users, with a ratio of three professionals for each clerical person. Professionals are given the task of running workloads consisting of a mix of database activity, spreadsheet activity and terminal emulation activity. Clerical personnel are given the task of working with word processing applications and terminal emulation.

Within these functions, activities are monitored and, when executed, are time-stamped in order to measure the response time of the server and its associated server software to the individual user. Thus, a simulation of typical "real world" workloads is achieved with the corresponding server response times being used as the criteria for performance.

The response times are then compared to the results obtained when performing the same workload on a standalone PC/AT with hard disk. The values obtained from the PC/AT are normalized to a value of 1.0 and the server results are expressed as a fraction or multiple of that time.

A response of greater than 1.0 indicates that the response is slower than the PC/AT and a response less than 1.0 indicates that the response is faster than a PC/AT. The response times are expressed as a relative percentage of the normalized PC/AT response time.

4. TEST RESULTS

Figure 1 shows the results obtained for the Digital and Novell server configuration. Figure 1 summarizes the overall system response time as seen by the user. A response time of 1.0 would reflect a level of performance that is equal to that of a PC/AT hard disk. A response time that is less than 1.0 shows a level of performance that is faster than a PC/AT hard disk.

Figure 1 shows that a PC connected to a MicroVAX 2000 server has a level of performance that is better than that of a PC/AT hard disk for 1 to 21 active users, whereas the Novell server and NFT software is from 15% to 25% slower than a PC/AT in the 1 to 21 active user range.

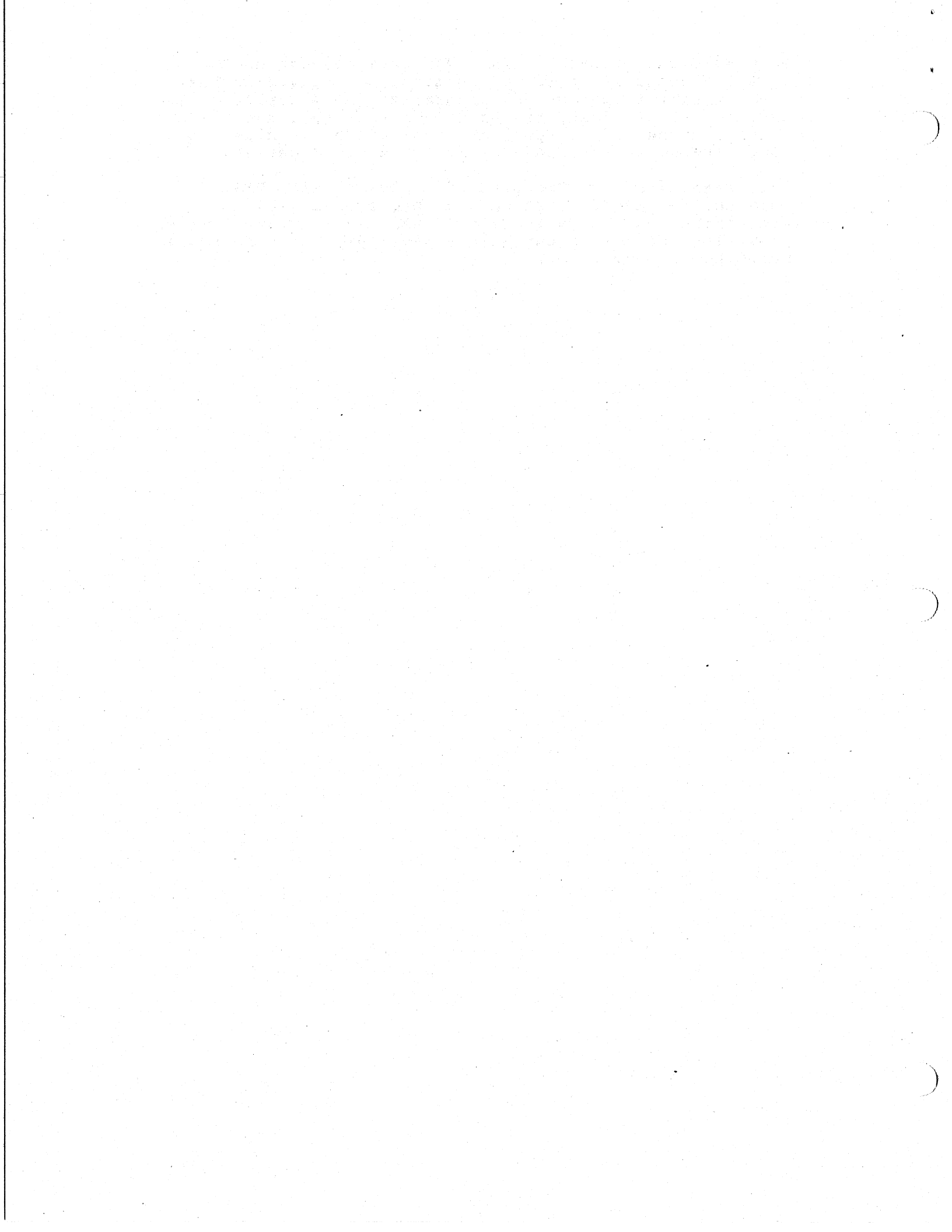
As the number of users is increased from 20 to 32, we see the performance of the servers decrease slightly until, at 32 users, the Novell server and SFT Netware software is approximately 30% slower than a PC/AT with hard disk, while the MicroVAX 2000 is 12 % faster than the Novell server and software.

5. CONCLUSIONS

From the foregoing, we can conclude that VMS Services for MS-DOS offers substantial performance advantages when compared to Novell's premier server product, SFT Netware.

When used on a MicroVAX 2000, VMS Services for MS-DOS offers exceptional price/performance advantages in the 1 to 32 user range, which encompasses the majority of PC LANs today. In fact, research indicates that the average number of PCs per server is actually quite a bit lower, being in the range of 10 to 12 users per server.

This means that the MicroVAX 2000, teamed with VMS Services for MS-DOS Version 2.0, provides a very attractive answer for today's PC LAN requirements, while providing the growth capability necessary for tomorrow's networked PC environment.



Performance Test DEC vs. Novell

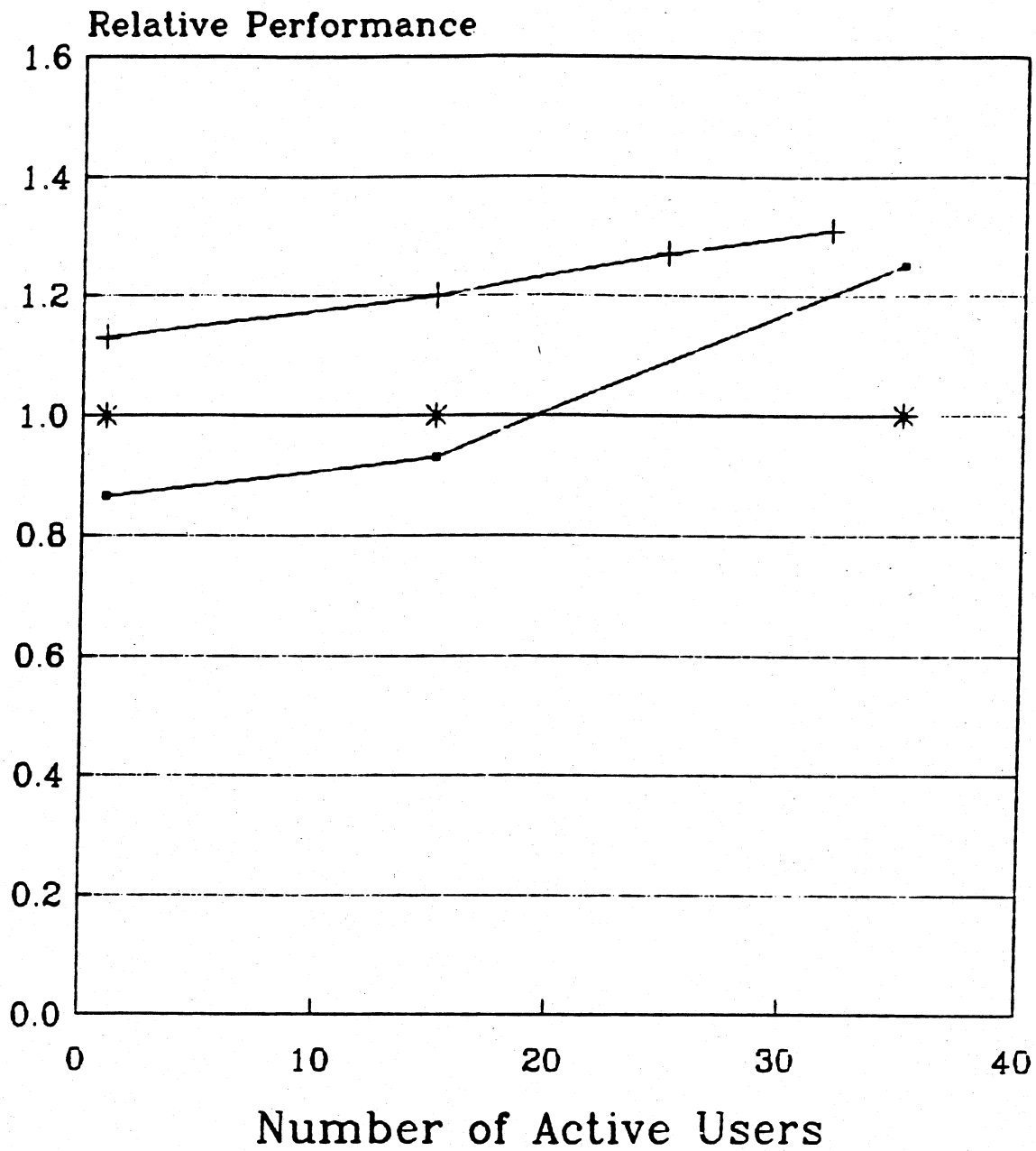
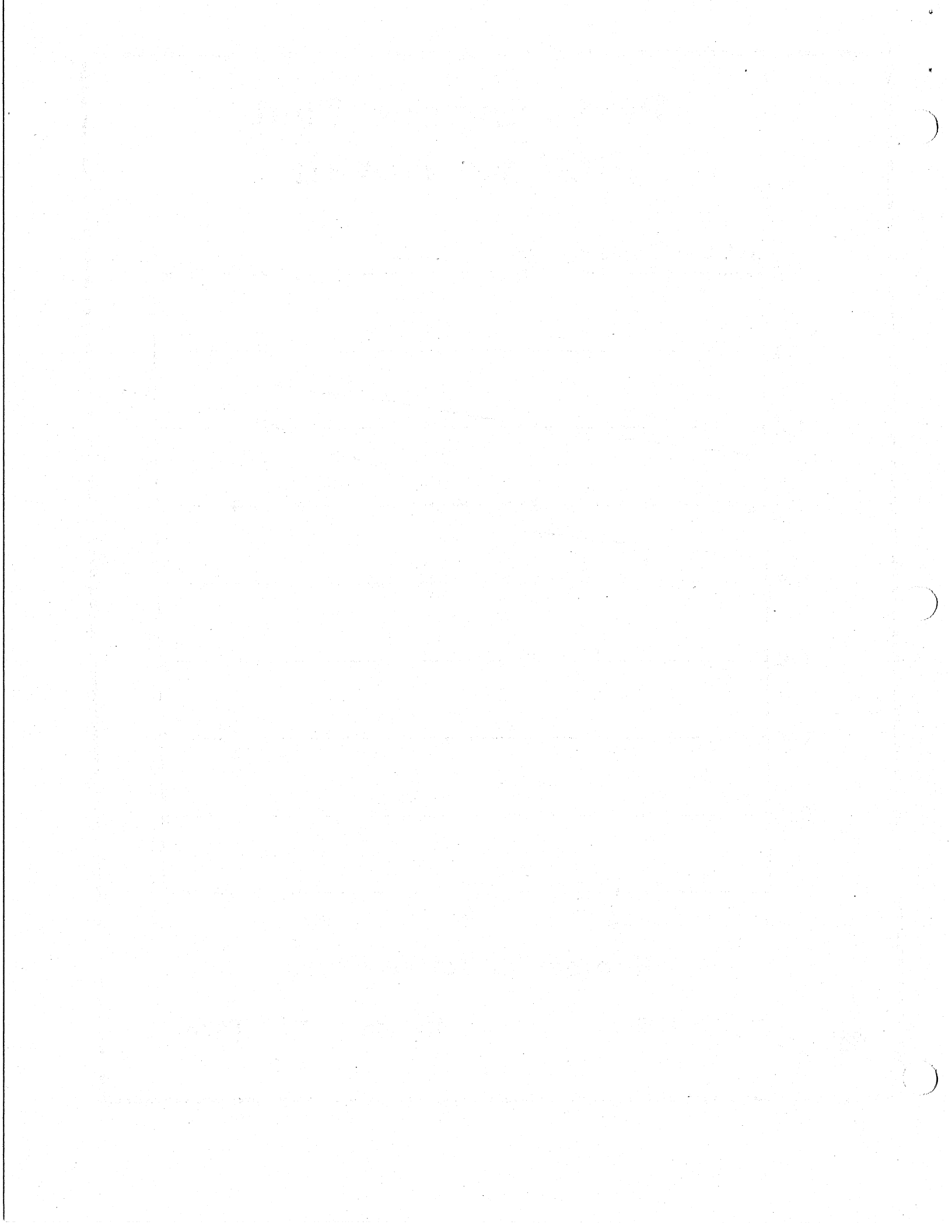


Figure 1 —●— VMS Svcs —+— SFT Networkware —*— PC/AT



 *
 * PCSA V2.0 Server Problems *

SPR#	Component	Abstract
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00228	LAD Server	LADDRIVER Crashes On SMP VAX (8800)
00212	LAD Server	Can't Remove Password From A Mounted Disk Service
00226	LAD Server	DEBUG Messages In Log File
00209	File Server	File Sharing Problems With Append
00210	File Server	Cannot Delete File With R/W Attributes
00211	File Server	A Read-Only File When Renamed To Invalid Name Gets Deleted
00213	File Server	Wild Card Delete Broken Again
00235	File Server	Print Jobs Fail To Print On V5 Unless Username Given On Tree Connect
00142	File Server	User 1 Can Rename File Which Has Been Denied All By User 0
00234	File Server	Access Problems To Common Directories
00236	File Server	Whenever A Rename Is Done, The Filename Is Left In Memory
00207	File Server	PCFSS\$SERVICE_DATABASE Converted During Install
00029	VAXmate Server	Client Cannot Get Date And Time From VM Server
00121	Oper Interface	Error Concealed If Virtual Memory Is Exceeded
00221	Oper Interface	Documentation On Lastcp Show Status Needs Update
00205	LAD Server	CONVERT LAD\$SERVICE DATABASE
00232	File Server	Common Read Crashes LAVC Satellite
00233	File Server	Common Write Causes The Server Processes In A LAVC To Enter Strange State
00195	File Server	'dir' returns '.f' for '.foo' file
00196	File Server	Net Attrib ARCHIVE.DIR Should Have Failed Since Archive Is A Subdir
00198	File Server	Server Can't Log Net Attrib SMB's

00229 Oper Interface Anyone May Dismount A LAD System Disk

00126 Oper Interface PCSA MANAGER Allows Granting File Service At
The Root Directory Of A Physical Drive

Software Problem Report #228
Product: VMS LAD Server
Class: Bug

PROBLEM: LADDRIVER crashes on SMP VAX (8800)

This is the first time that we know of that someone has attempted to run PCSA on an SMP VAX. The LAD software crashes the system during startup.

Initial investigation indicates LADDRIVER is causing the crash.

ACTION/REMARKS

Since this was not a product requirement for V2.0 do the following:

- Change status to anomaly - Won't Be fixed
- Fix and release as part of V2.0.A

Software Problem Report #212
Product: VMS LAD Server
Class: Bug

PROBLEM: Can't remove password from a mounted disk service

Here's the scenario:

1. Mount a service with a password:

PCSA MOUNT DISK FOO/PASSWORD=FOO

2. Now remove the password

PCSA SET DISK SERVICE FOO/NOPASSWORD

The above sequence does not make the service available without a password. I traced this using Frank's debug version of PCSA_MANAGER, it is in fact setting the password to null. From the client end NET DISK SERVICES FOO reveals that the service is still password protected. Attempting to connect to service FOO returns ACCESS DENIED.

ACTION/REMARKS:

The workaround is to DISMOUNT FOO and then MOUNT DISK FOO without a password.

Software Problem Report #226
Product: VMS LAD Server
Class: Bug

PROBLEM: DEBUG Messages In Log File

LAD\$KERNEL outputs debug messages in the log file.

For example: Allocating SDB nnnnnn
Deallocating SDB nnnnnn

ACTION/REMARKS:

These debug messages should have been removed from the code that went in to the V2.0 CMS class.

Software Problem Report #209
Product: VMS File Server
Class: Help

PROBLEM: File Sharing Problems With Append

Several file sharing problems have cropped up with append mode.

If a file is open for read access by a primary client with deny-write, a second client can still open the file for append access (deny-write|deny-none), but cannot write to it (returns 05 == access denied). Since append -> write, the open should fail.

The same thing occurs with the share flags swapped. If the primary client has the file opened read & deny-none, a second client can open the file for append & (deny-write|deny-none) with no error, but cannot write to it (access denied).

The first case is important, the second not.

As an aside, the VAXmate server returns 'access denied' for all attempted appends on an open file, PCFS returns a sharing violation when an append fails.

Software Problem Report #210
Product: VMS File Server
Class: Bug

PROBLEM: Cannot delete file with r/w attributes

If the file has VMS protection mask (R,R,R), and dos attributes are set to R/W (i.e. -R with ATTRIB command) then trying to delete the file gives "Access Denied" message.

ACTION/REMARKS:

It turns out that the file is being incorrectly created with S:R,O:R,G:R,W:R when the read-only attribute is used on the create. Essentially, the wrong RMS protection mask is being used when the file is created.

Software Problem Report #211
Product: VMS File Server
Class: Help

PROBLEM: A read-only file when renamed to invalid name gets deleted.

A file with +R attribute can be renamed to a NULL filename which deletes the file.

ACTION/REMARKS:

It appears that this problem can only be created by programs that directly send SMB packets (like NEWT). The case is specifically filtered by the Redirector. Given this information, the QRB ruled that the customer impact is much less than the potential impact of fixing the bug and breaking something else.

Software Problem Report #213
Product: VMS File Server
Class: Bug

PROBLEM: Wild card delete broken again.

When doing a wild card delete (DEL *.*), if the server encounters a read-only file say a part of the way down the list, it will give "Access Denied" (correctly) for that file and then NOT delete all the subsequent files.

ACTION/REMARKS:

This problem was fixed in an earlier release (V1.x) and has re-appeared

Software Problem Report #235
Product: VMS File Server
Class: Bug

PROBLEM: Print jobs fail to print on V5 unless username given on tree connect

When no username and password is given on a tree connect to LPTn:, the file server uses the client's nodename use a username when it submits the job to be printed. On VMS V5, this username is checked against the UAF, so the print request usually fails (unless the nodename happened to also be a username).

Either we can let everything print under PCFSSACCOUNT, or (through an establish default user kinda SMB) have each virtual circuit have a default username that it can use on print jobs.

Software Problem Report #142
Product: VMS File Server
Class: Bug

PROBLEM: V1.n ** user 1 can rename file which has been denied all by user 0

PCNET and VAXmate servers return 3/32 on attempted rename of denied file. In addition, user 0 must first close file before successful delete is done.

Test:

- 1) open test file user 0 (pid=10) with share = 0x12, deny read/write
- 2) rename test file user 1 (pid=20), returns success, should fail with 3/32
- 3) delete test file user 0 (pid=10), fails with 3/31, should succeed.
- 4) close test file user 0, success
- 5) delete test file user 0 (pid=10), success

PCNET & VAXmate Results:

test 2 fails with 3/32 returned
test 3 succeeds with 0/0 returned

Test Procedure & Test Log Data:

see SMB511.ARM, SMB511.ARC, and SMB511.LOG

ACTION/REMARKS:

A portion of the problems here have been fixed, the remaining portion are not likely to be seen in normal use.

Part of this was related to GOFB hashing and I was sorta hoping it would all go away after both of the GOFB hash related SPRs were fixed (SPRs 182 and 197), but no dice - SMB511 still fails, this SPR is still open. However, I still haven't seen any manifestation of this problem outside newt (not that it shouldn't be fixed, it just don't seem too critical it this point).

Software Problem Report #234
Product: VMS File Server
Class: Bug

PROBLEM: Access Problems To Common Directories

If you connect to a common (RWC) file service specifying a username and password, you can create files that you cannot modify with any of the 'net attrib' functions. This situation occurs when you do not normally have access to the shared directory through VMS (eg: PCCOMMON of RANGER).

As a suggestion, since the file server handles attrib commands, it should recognize the request for a file in a common directory and perform the same type of access validation it does for connects, ie: let you play with it if you created it, even if you can't get through the top level directory...

Software Problem Report #236
Product: VMS File Server
Class: Bug

PROBLEM: Whenever a rename is done, the filename is left in memory

This doesn't fill up memory very rapidly, but it's conceivable that on a system that goes a long time between booting and has a small pagefile or pagefile quota or virtual page count this could be a problem.

ACTION/REMARKS:

This is actually not a bug in the file server but in LIB\$RENAME_FILE. However there are known workarounds (such as specifying a file scan context to LIB\$RENAME_FILE and then calling LIB\$FILE_SCAN_END with it or using a manual rename written with ACP QIOs).

Software Problem Report #207
Product: VMS File Server
Class: Issue

PROBLEM: PCFSSERVICE_DATABASE converted during install

VMSINSTAL should convert the PCFSSERVICE_DATABASE during a
installation if the file already exists.

Software Problem Report #29
Product: Vaxmate Server
Class: Bug

PROBLEM: Client Cannot Get Date And Time From VM Server

I have an IBM client making connections to a VAXmate server (ISSYS). As part of the autoexec.bat procedure the date and time are set from the server. At this point the following message is returned:

Invalid Protocol negotiated from node TEST67
Currently no time server available

note: TEST67 is a VAXmate server

The VAXmate server was the only server defined for this client. Does a VAXmate server offer date and time services or is it documented somewhere that this message can be ignored and the client can supply the date and time?

We are running with DEPCAs in all our IBMs in the lab. We also experience inconsistencies in receiving Time/Date.* Two clients can be booted at the same time and one will find Time and Date and the other will say No Time Service available. These clients have both the VAXmate server and the VMS server defined, and look for time from the VAXmate server first. Sometimes it receives it, and sometimes it says "invalid protocol," and then goes to the VMS server for the time, and sometimes it just says "No time service available." We would like to be more specific about when this occurs, but right now it seems very random.

*All the above problems have been noted with the IBMs.

Software Problem Report #121
Product: VMS Oper Interface
Class: Bug

PROBLEM: Error concealed if virtual memory is exceeded

If LAD\$KERNEL cannot obtain the virtual memory it needs then it returns the error message indicating this state. PCSA_MANAGER conceals this in a generic PCSA_MANAGER error return.

Software Problem Report #221
Product: VMS Oper Interface
Class: Documentation

PROBLEM: documentation on lastcp show status needs update

On p7-14 of the VAX/VMS Services for MS-DOS Administration Guide, the example of the "show status" command displays an incomplete list of counters. The "show status" command now displays 9 fields instead of the six fields that are on the documentation.

Software Problem Report #205
Product: VMS LAD Server
Class: Issue

PROBLEM: CONVERT LAD\$SERVICE DATABASE

The LAD\$SERVICE_DATABASE should be converted during VMSINSTAL.

ACTION/REMARKS:

Due to time constraints this will be deferred to V2.2.

Software Problem Report #232
Product: VMS File Server
Class: Help

PROBLEM: Common Read Crashes LAVC Satellite

Environment : BOURNE and BOURN2 are members of a LAVC, bourne being the boot member and bourn2 the satellite, VMS version 4.6. ANGEL2 is VMS version 4.7. Two VAXmate clients, tst719 and tst720, running V2.0 client software. Their configurations are as follow:

```
tst719 -
  g: \\angel2\08-00-2b-03-f1-1c
  h: \\angel2\vxsysbl6          (lad)
    m: \\angel2\tst719%tst719
    n: \\bourne\pccommon

tst720 -
  f: \\angel2\08-00-2b-03-eb-b8
  g: \\angel2\vxsysbl6          (lad)
    m: \\angel2\tst720%tst720
    n: \\bourn2\pccommon
  lpt1: \\bourn2\ln03_dport
```

```
bourne      bourn2
  \          /
    pccommon
    |
  servertst
    |
  access.bat
  access2.bat
  file1.txt
```

```
TEST SCRIPT :
  access.bat

  :loop
    copy file1.txt file2.txt
    copy file2.txt file3.txt
    copy file3.txt file4.txt
    fc file1.txt file4.txt >> result.txt
  del file2.txt
  del file3.txt
  del file4.txt
  goto loop
```

```
access2.bat

:loop
  copy file1.txt file5.txt
  copy file5.txt file6.txt
  copy file6.txt file7.txt
  fc file1.txt file7.txt >> result2.txt
  del file5.txt
```

```
del file6.txt  
del file7.txt  
goto loop
```

TST719 current directory n:\servertst, running access.txt. TST720 current directory n:\servertst, running access2.txt. When the two clients are fired-up with the corresponding batch files, bourn2 crashes after approximately 30mins to an hour. Bourne is not experiencing any problems. I can consistently reproduce this crash. The crash dump shows that the process that is currently running when the crash happened is pcfs_server. I realize that this might not mean that the pcfs_server process is the cause of the crash.

When tst719 is running alone, bourn2 stayed up (1 day and 23 hours) until I started up the test on tst720 again! I also tried to run access2.bat on tst720 while tst719 is not running access.bat, bourn2 stays up.

was able to reproduce the crash on the CI cluster using simpler scenario - noted as followed

I have been able to reproduce the problem seen on the LAVC with a simpler scenario on both LAVC and CI clusters using V2.0 server software.

The crash occurs when clients attempt to access the same record of the same file from different nodes on a cluster. This was done with nothing more than the DOS copy command (looped in a batch file).

In a LAVC, the crash causes the satellite node to crash (completely) and causes the server process on the boot node to die.

Since I do not have privs on Ranger, I was unable to determine the exact state of the cluster, but one of the nodes in conflict for the record crashed (and has not come back up...).

It is obvious that PCFS_SERVER is related to the crash and this is easily reproducible on either cluster. Is it VMS or PCFS that is responsible? I leave the question open...

On small configurations (such as those used for testing) the likelihood of this occurring has been small, but as configurations grow with more clients all sharing common directories, the potential damage here is frightening. These are not small client crashes; these are big boy VAX deaths.

ACTION/REMARKS:

This is a bug in VMS and has been reported to the appropriate VMS people.

Software Problem Report #233
Product: VMS File Server
Class: Help

PROBLEM: Common Write Causes The Server Processes In A LAVC To Enter Strange State

ENVIRONMENT: (server) LAVC - bourne, bourn2
(client) VAXmate - tst719, tst720

client tst719 connected to pccommon via bourn2
running access3.bat file
client tst720 connected to pccommon via bourne
running access5.bat file

TEST SCRIPT :

```
access3.bat
:loop
copy file8.txt file5.txt
copy file5.txt file6.txt
copy file6.txt file7.txt
fc file8.txt file7.txt >> result4.txt
del file5.txt
del file6.txt
del file7.txt
goto loop
```

```
access5.bat
:loop
copy file1.txt file2.txt
copy file2.txt file3.txt
copy file3.txt file0.txt
fc file1.txt file0.txt >> result4.txt
del file2.txt
del file3.txt
del file0.txt
goto loop
```

(common writing to result4.txt, while the batch files sychronized at some point)

When both clients attempt to writing to the same file, ie,result4.txt,

The first client, CLIENT1, will successfully open the file for a write/append operation. The second client, CLIENT2, will encounter the expected error message:

```
sharing violation error reading drive n
abort, retry,fail?
```

When CLIENT1 has released the file, a retry is specified on CLIENT2 to reaccess the file. However, CLIENT2 continues to recieve the now unexpected error message:

sharing violation error reading drive n
abort, retry, fail?

At this point, CLIENT1 (the originaly OK client) encounters the error message:

net825 Network data fault error writing drive n
abort, retry, ignore, fail?

A retry causes the another error message

General failure error reading drive n
abort?

If respond "Fail" to the above messages to allow the test to continue, it will.

However, this file, result4.txt, seems to become unaccessible to both clients. CLIENT1 will ALWAYS receive NET825 errors on any attempt to access the file; and CLIENT2 will ALWAYS receive "sharing violation" on its attempt to access the file.

When both clients stop running the tests (via control break), CLIENT1 continues to recieve "Sharing Violation" error when trying to type the FILE. But CLIENT2 encounters no problem in this case. But the size of the file at the end of the testing is 0??

The pcfs_server.log file shows "UNEXPECTED" error messages:

this includes ...

27-Mar-88 17:11:22 (smberr.c) Unknown VMS error 196640 (no privilege for attempted operation)

WATCH OUT, routing to myself!, Nodename = BOURNE

Similar messages also appear on the pcfs_server.log on Bourn2.

Software Problem Report #195
Product: VMS File Server
Class: Bug

PROBLEM: 'dir' returns '.f' for '.foo' file

Created the file .foo using EDT. Redirected a MS-DOS drive to the account and did a directory. The file server listed file .foo as .f. It should not have listed the file since MS_DOS normally does not allow filespecs consisting only of a file extension (exceptions are . and ..).

Software Problem Report #196
Product: VMS File Server
Class: Bug

PROBLEM: Net Attrib ARCHIVE.DIR Should Have Failed Since Archive Is A Subdir

M:\> net attrib archive.dir

\ARCHIVE.DIR (System:RWE,Owner:RWE,Group:RWE,World:RWE)

Since the filespec did not contain any wildcards LDU sent a SMB to the file server requesting the file attributes for the file '\archive.dir'. Since this file does not exist, the file server should have rejected the request, which would have resulted in the error message "Invalid file specification".

Instead it treated the SMB as a request for the file attributes of the subdirectory \archive.

Software Problem Report #198
Product: VMS File Server
Class: Compatability

PROBLEM: Server Can't Log Net Attrib SMB's

SUGGESTION: It would be nice if the SMB logging included net attrib SMB's. Currently they are treated as unrecognized extensions.

ACTION/REMARKS:

This problem deferred to V2.2.

Software Problem Report #229
Product: VMS Oper Interface
Class: Help

PROBLEM: Anyone May Dismount A LAD System Disk

It appears that any user can dismount a LAD system disk, i.e. VXSYS, ISSYS. It appears that the current DISMOUNT code checks for SYSS\$NOPRIV error, but in some instances RMS\$NOPRIV is returned.

This bug was caused by an undocumented return code from the SYSS\$CHECK_ACCESS system service used to check if the caller has write access to the file he/she is trying to dismount. If the user does not have write access to the file, the service is documented to return SSS\$NOPRIV. If the file is in a directory that does not have read or execute protection, the service returns an RMS\$_PRV error. The current code does not check for this. I have made the necessary changes to fix this bug, but it did not make it into the v2.0 product.

ACTION/REMARKS:

There is however a workaround. Any directories/subdirectories containing non-user lad disks should have read and/or execute protection for system,owner,group,world. Giving the directory execute protection but not read protection will make it unreadable via directory commands, but the access check in PCSA_MANAGER will do the correct thing.

Documented workaround in release notes. Will fix and release as part V2.1.

Software Problem Report #126
Product: VMS Oper Interface
Class: Bug

PROBLEM: PCSA MANAGER Allows Granting File Service At The Root
Directory Of A Physical Drive

At a result, any client connected to such file service will encounter failure when using any DOS commands that involve searching recursively through subdirectories, eg. xcopy /s, backup /s, etc. I have discussed this problem with Dave H. from the DOS team. The problem lies on the fact that the root directory of VMS contains a pointer to itself. Thus, an infinite loop situation occurs when trying to access the root "self-pointer" as a normal subdirectory.

Since DOS is not supposed to know anything about the VMS directory structure, this is not really a DOS problem.

The following command is issued to pcsa_manager to grant such service :

```
pcsa_manager> add ser/dir testdir /root=dual:[000000]  
pcsa_manager> grant/group public testdir testdir /acc=(read,write,  
create)
```

ACTION/REMARKS:

Who ever said that you COULD use a rooted directory for such things? What was neglected to tell you is that his beloved UNIX also allows self referential directories (which is what this problem really relates to), and so you'd have the same problem there too. We are not going to special case the root. The ONLY person who should EVER under ANY circumstances use [000000] in a VMS system is the person administrating the disk volume. There's no mention in the SPD about us being a VMS disk management product.

