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* PCNOS1.DOC
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*
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PC/NOS-1   A NETWORK OPERATING SYSTEM FOR CP/M 2.2

OVERVIEW

PC/NOS-1 turns CP/M 2.2. into a multi-user network operating system. It allows multiple CP/M users to share volumes simultaneously. It provides implicit and explicit file locking, record locking and named (semaphore) locking.

In addition PC/NOS-1 has a connection and status program which allows users to redirect the logical devices on their local CP/M computer to either point at local physical devices or devices on other computers running PC/NOS-1.

INVOKING PC/NOS-1

In order to run PC/NOS, you must have the following programs on your CP/M system diskette.

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        PCNOSLDR.COM
        PCNOS.SPR
        CCP.SPR
        PCCMD.COM
```

Boot your CP/M system and then run the program PCNOSLDR.COM. This program loads PCNOS.SPR and CCP.SPR and automatically attaches them to you CP/M system. You will see the message:

(NOTE: This node number prompt is only temporary)

Node Number -

Type any number between 0 and 9. Make sure each computer has a different node number.

Shortly you will see your prompt reappear. Your CP/M system is now running under PC/NOS. All of your connections are local except C: and D: which are directed to node 3. In order to redirect some of you logical devices to other computers, you must run the program PCCMD.COM.

RUNNING PCCMD.COM

This program logs you on as a PC/NOS network user and then allows you to redirect your logical devices to other computers on the network which are running PC/NOS.

You will see the message:

PC/NOS-1 Connection and Query Program Version 1.3.

What is your user name? -

(NOTE FOR SYSTEM ADMINISTRATOR EYES ONLY!!)

When PCCMD.COM is run it searches the disk for the file PCNOS.DIR. This encryped file contains all the users' names and passwords which may legitimately log on from this PC/NOS disk. If PCNOS.DIR does not exist, PCCMD.COM will create it and fill user number zero with the system's name and password. If this is the case you must log on as 'system' and use 'sysfoo' as the password.

After typing in your user name you will be prompted for your password.

                — LOWER CASE

what is your password, system? -

Type in the password. Asterisks are echoed in place of the password characters.

THE SYSTEM ADMINISTRATOR'S MENU.

1) Display Connections.   2) Make Connection.
3) Change Name.   4) Change Password.
5) Add User.   6) Delete User.
7) Quit.

THE OTHER USER'S MENU.

1) Display Connections.   2) Make Connection.
3) Change Password.   4) Quit.

If you log in as system, you will see the system administrators menu. If you log in as a user, you will see the user's menu. The functions are exactly the same, except the system admnistrator has more.

The system administrator creates a pcnos.dir for other users by adding that user and then deleting the system administrator from that pcnos.dir before giving it to the user. In this manner the administrator can ensure that each user has a unique user name and number. This is important for the file and record locking functions.

All commands are invoked by typing the number followed by a return.

1) Display Connections.

   You will see the display appear:

                 CONNECTIONS FOR NODE 3
ENTITY   DESTINATION COMPUTER   DESTINATION ENTITY
pc_nos
node_ram
error   (Local)   crt
com_lua   (Local)   shared_pua
com_lub   (Local)   shared_pub
com_luc   (Local)   shared_pua
com_lud   (Local)   shared_pub
conin
conout   (Local)   crt
lstout   (Local)   printer
shared_pua
shared_pub
shared_puc
shared_pud
keyboard   (Local)   conin
crt
printer

       The logical devices in this display are:
                      error
                      com_lua
                      com_lub
                      com_luc
                      com_lud
                      conout   (Don't use)
                      lstout
                      keyboard   (Don't use)

       The physical devices are:
                      conin
                      shared_pua
                      shared_pub
                      shared_puc   (Use if there is a disk c)
                      shared_pud   (Use if ther is a disk d)
                      crt
                      printer

       The system devices are:
                      pc_nos   (Don't use)
                      node_ram   (Don't use)

2) Make a Connection.

   Connections are made using the following canonical form

      (Logical Device) = (@node number) (Physical Device)

   As an example:

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       com_luc = @7 shared_oua
       lstout = @7 orinter
```

       Using these to commands I have set thing up so that whenever
I use my C: oromote I will actually be accessing node 7's disk A.
Also if I direct anything to my CP/M lst: it will be orinted on
node 7's orinter.

3) Change Name (System Administrator only)

       Right now this feature only allows the system administrator
to change name.   Simoly type in the new name followed by a
return (up to 15 characters).

4) Change Password

       Any user may change their oassword by selecting this ootion.
The user is oromoted:

Change Password: Tyoe in new oassword (up to 8 characters) 3 times.
Enter new oassword[1] - ***
Enter new oassword[2] - ***
Enter new oassword[3] - ***

       You must enter the same oassword 3 times in order for it to
become active.   Stars are echoed in olace of password characters.

5) Add User   (System Administrator only)

       The system administrator should add users to the system in
an orderly fashion, making sure that all users have a unioue name
and number and that defunct user numbers are recovered.   There
mav oe up to 256 unioue user names and numbers.

       The adder is oromoted for the user number to add.

       Add user.   User number -

       Tyoe in a number between 1 and 255 inclusive.

At this ooint the command executes the Change Name and Change
Password commands which have already been documented.   After a
user has been added, the file PCNOS.DIR is uodated right away.

6) Del User   (System Administrator only)

       A user can be deleted from a PCNOS.DIR using this command.
The deleter is oromoted:

       Delete User.   User number -

       Tyoe in a number between 0 and 255 inclusive.

7) Quit

This command takes you back to CP/M command program. Typing
control-c at any time except when entering passwords will also
exit PCCMD.COM.

FILE LOCKING

PC/NOS-1 supports the following types of file locking.
These file stati are only in effect as long as PC/NOS-1 is
running.

Multi-read

This is the implicit file lock. Unless otherwise specified,
all files on the pcnos system are multi-read. In this way the
same copy of any command file can be run by several users
simultaneously. You may also explicitly set a file to multi-read
by running the program MR.COM on the file.

A) mr foo.doc

Multi-read Single write

When ever some program writes to a multi-read file its
status implicitly changes to Multi-read Single write, until that
file is closed (at which point it reverts to Multi-read).   In
other words the first program to write to a file has execlusive
write priveledges on that file until it is closed. A user may
set a file to Multi-read Single write by running the program
MRSW.COM on it.

A) mrsw foobar.doc

Multi-read Multi-write

This file status implies that record locking is to be used
on the file, such as a multi-user data base, etc. A file may
only be explicitly set to this status by running the program
MRMW.COM on it.

A) mrmw database.dat

Exclusive

This status on a file means that only one user can open the
file for reading and writing at a time. It is a good idea to set
this status on word processing files etc. where more than one
person may be at try to update it. This will prevent the lost
update problem where on user reads the file for editting.
Meanwhile another user opens the file for editting.   The first
user writes it back and then the second user writes it back. The

lost update is:
    A) Either the second user's data gets written over the first
        users changes.r
    B) The second user is not allowed to write since the file is
        multi-read single write.

A user sets a file to exclusive by running the program EXCLU.COM
on it.
    A) exclu mung.doc

Private

    An owner of a file can declare it as private.   This means
that only that owner may access the file. A file is set to
PRIVATE by running the program PRIV on it.

    A) priv secret.com

RECORD LOCKING

    PC/NOS-1 Supports the MP/M system calls 42 (lock record) and
43 (unlock record).   Refer to the MP/M documentation for details.

NAMED LOCKING (SEMAPHORE)

    PC/NOS-1 Provides a way for users to register and unregister
any set of names up to 12 characters each. These names could be
file names for instance. Refer to the PC/NOS system reference
guide for more details.