

Programming Staff Note 50

Supersedes PSN 50 of Sept. 24, 1965

TO: F. J. Corbató

FROM: Judy Spall

DATE: Oct. 27, 1965

SUBJ: Proposed changes to LOGIN and LOGOUT

The following is a proposal for changes to the commands LOGIN and LOGOUT. It has been found that the current scheme of time accounting causes the commands to take an excessive amount of machine time. In addition, since the accounting information is all kept in one place, there is a problem of security. The time and security problem could be reduced considerably if the accounting information for each user were kept in the file directory of each user. This file could be author protected by one administrator at each installation. The commands as they currently exist, are coded in FAP and are very difficult to modify. The commands, therefore, should be rewritten in MAD.

For historical reasons the accounting file in each users file directory will be a card image file, that is, 14 words/line, but it should be noted that ideally the file would be line-marked.

The proposed format of each user's file TIME ACCOUNT, which is write-only, protected and private to one administrator, is as follows:

line 1:

COL. 1-6	PR@BN@	
7-12	NAME	
13-18	PR@GN@	
19-24	DATE1	
25-30	TIME1	date and time of last logout
31-36	DATE2	
37-42	TIME2	date and time from which time has accumulated

line 2

1-6	TU1	} time used for each shift in minutes
7-12	TU2	
13-18	TU3	
19-24	TU4	
25-30	TU5	
31-36	CU1	} total console time for each shift in minutes
37-42	CU2	
43-48	CU3	
49-54	CU4	

In all succeeding lines all variables must be separated by at least one blank.

line 3

RQDR	User's current quota on drum
RQDS	" " " " disk
RQTS	" " " " tape
TA1	} current time resources for each shift
TA2	
TA3	
TA4	
TA5	

line 4

Same as line 3 except that it is the maximum allotment available after the use of EXTEND and DEPOSIT

lines 5-n

ALLC PRQB	Problem number of allocation group leader, = 0 if nonexistent
ALLC PRQG	Programmer number of allocation group leader, = 0 if nonexistent
PASSWD1	Password
RESTR1	Restriction codes associated with PASSWD1
PRTYGP1	Party group associated with PASSWD1
S1	Standby indicator associated with PASSWD1, if * can be standby
ASTER	if *, what follows is consoles allowed on with PASSWD1 if **, what follows is consoles not allowed on with PASSWD1
ID <sub>i</sub>	console ID's
\$	\$ denotes end of PASSWD1 block.
.	
.	
.	
PASSWD <sub>n</sub>	
RESTR <sub>n</sub>	
PRTYBP <sub>n</sub>	same as above
S <sub>n</sub>	
ASTER	
ID <sub>n</sub>	
\$	

The following is a list of the minimum changes which must be made in order to implement the previously described time accounting scheme.

1. Completely rewrite the MFD with ~~PROBNO~~ NAME and reset the disk storage so that the disk files are associated with the proper ~~PROBNO~~ NAME combination. This change will mean that ~~PROGNO~~ will no longer be used. All programmer uses of ~~PROGNO~~ must be modified. Such changes would be links and attaches, for example. Note that each ~~PROBNO~~ and NAME must now be unique.

2. Completely rewrite the commands ~~LOGIN~~ and ~~LOGOUT~~ in MAD where the commands operate as they currently do except for the following:

a) They read the user's file TIME AC~~OUNT~~ for their time accounting information.

b) The console time for each shift will be maintained. If a user attempts to ~~LOGIN~~ when his console time for a given shift is greater than FACT(I) times his time left, he will not be allowed to ~~LOGIN~~. FACT(I) will be a four word array in common. It will be the factor to be used for time shifts 1-4.

c) A particular user may have more than one password with a particular set of restriction codes, party group, etc. associated with it. ~~LOGIN~~ will have to check accordingly.

d) A core must be changed and therefore implies a new version of CTSS. The array LMULT is no longer used by CTSS and should be replaced with date logged in. The array ~~PROGNO~~ should still remain and be set from the file TIME AC~~OUNT~~. There are too many implications with time accounting records to delete it. A core must also contain the author number of the administrator in charge of the TIME AC~~OUNT~~ file. A core must also contain the array FACT.

These A core modifications not only implies a reassembly of CTSS and affected commands, but also special test sessions to check out the entire package including ~~LOGIN~~ and ~~LOGOUT~~.

e) If a user has exceeded his time limits on a given shift ~~LOGIN~~ can call the EXTEND subroutines to allot more time, if wanted and available.

f) ~~LOGIN~~ must check the author of the file TIME AC~~OUNT~~ to be sure it is the proper person. The administrative author is in A core. This provides the ability of resetting this author number in A core, temporarily, so that no new person can ~~LOGIN~~.

g) A means of bootstrapping ~~LOGIN~~ should be added. For example, one might be able to set the console keys in an appropriate manner to ~~LOGIN~~ without passwords. Such a facility would aid in debugging.

3. A program must be written for the administrator so that he may do the following at the end of each time allotment period:
  - a) Temporarily reset the administrative author's number in A core so that no one may LOGIN while this program runs. Also check A core to see who is logged in.
  - b) Attach to each user and collect the time used information if wanted for statistical purposes and then clear it out.
  - c) Collect and zero out the time used information in A core and merge it with the above. Check A core to see if anyone has logged out since the program started.
  - d) Reset in A core the author number of the administrative author so that users may LOGIN.
  
4. A program must be written to create the file TIME ACCOUNT for each user.
  
5. A program must be written to rewrite the MFD with PROBN# NAME and reassociate all file directories which are now with PROBN# PRGN#.
  
6. The initialization section of the supervisor must be modified to read the file INIT ACCOUNT whose format is as follows:

line 1

MAXUSR	Maximum number of users for CTSS
PROBN#	Problem number of administrator
NAME	Name of administrator
FACT(1)	Factor to be used to compute console time used for each shift. It is multiplied times the time left for each shift.
FACT(2)	
FACT(3)	
FACT(4)	

line 2

(used to indicate if user is logged in as primary or standby)

XXX1	Party group number
YYY1	Number of lines for group number XXX1
.	
.	
.	
XXX5	Party group number
YYY5	Number of lines for group number XXX5

The file INIT ACCOUNT resides in ml416 CMFL#2 as protected, read only and private to the administrator. The data within this file is placed in A core.

7. Dick Steinberg's accounting program must be modified to process the new file format.

8. The retrieve program must be modified to accept **PRØBNØ NAME** for the old tapes.
9. The commands **DPØSIT** and **EXTEND** must be modified to accept the new file format.
10. The command **LISTF** must be modified to omit printing the file **TIME ACØUNT**.
11. The command **TTPEEK** must be modified to indicate the date and time from which all times used are accumulated. It must also print the console time used for the first 4 shifts. All this additional information is available in the file **TIME ACØUNT**.
12. Dick Mills' program for allocation group leaders to allot time, etc. will have to be modified for the new file format.
13. All commands must be checked for possible reference to **PRØGNØ**. If there are any they must be changed to **NAME**.

The following is a proposal for 2 new commands which should be written once this time accounting data is available.

1. Command to change the password of a user. The password could be changed by the user himself or the administrator, only. Note that the command must ask that the user type the password he wants changed and what he wants it changed to. If he cannot type the password as it currently exists, he cannot change it.
2. Command to read the file **PRØGRM DATA** in **M1416 CMFLO2**. The format of this file might be:

```

NAMEa      PRØGa      PRØBa      NAME1a      NAME2a
b TELEa      ADDRESSa
NAMEb      PRØGb      PRØBb      NAME1b      NAME2b
b TELEb      ADDRESSb
.
.
.
    
```

Each line must be 14 words long and each variable separated by at least one blank

**NAME** must begin in column 1 and it is the name used by **LOGIN**. The last 6 characters of **NAME** will be recognized by **LOGIN**.

**PRØG** is the programmer number associated with **NAME**.

**PRØB** is the problem number associated with **NAME**.

**NAME1** is the full first name of **NAME**.

**NAME2** is the full last name of **NAME**.

**TELE** is the telephone extension where **NAME** may be reached.

**b** denotes a blank in column 1.

**ADDRESS** is the address of **NAME**.

The command would give any and all vital statistics on an individual given one argument. For example, if one knows a persons last name he may want to know his telephone extension. The first three words of the file may be created from each users **TIME ACCOUNT** file.

The file directory of the allocation group leader will have to contain the following files:

**RESRCE** allocation group leader:

At the beginning of the month the **RESRCE** file contains all the machine time and storage space allotted to those users under the allocation group leader. This file is deducted from as time is given to users initially and by means of the **EXTEND** command and it is added to by means of the **DPOSIT** command. Its format is as follows:

**b RQDR RQDS RQTP TA1 TA2 TA3 TA4 TA5**

**BACCNT** allocation group leader:

The file **BACCNT** is created by the allocation group leader at the beginning of each month. It contains the allotments of time and records for each user within that allocation group. Its format is as follows:

**PRØBN PRØGNØ RQDR RQDS RQTP TA1 TA2 TA3 TA4 TA5**

From this file the administrator creates line 4 of the file **TIME ACCOUNT** in the file directory of each user at the beginning of each time allocation period.

**TRANSC** allocation group leader:

The file **TRANSC** is created and updated by the commands **EXTEND** and **DPOSIT** and it contains the amount of time and records extended or deposited by each user.

Its format is as follows:

**PRØBNØ PRØBNØ**

**b DATE ITEM AMOUNT**

where: **ITEM** is "RQDR" ... "TAG"

**AMOUNT** is positive for **EXTEND** and negative for **DPOSIT**.