

To: Operations  
From: T. H. Van Vleck  
Date: 10/27/101  
Subject: Instructions for operating the initializer  
and answering service

This memorandum is a complete list of operator commands and instructions for operating the initializer console. It obsoletes and replaces MOSN-151 and MOSN-195.

#### INTRODUCTION

When the Multics bootload sequence is started, by the BOS command "BOOT", a process is created which attempts to access a terminal on a particular channel. This channel number is normally TTY192. The "initializer teletype" terminal is either dialed up to this port before booting, or is hard-wired permanently to the port.

While the system is running, the initializer may be in any of the following states:

- in the administrative ring
- waiting for a command in the user ring
- doing something in the user ring
- in "admin" mode in the user ring

It is important for the operator to know which state the initializer is in.

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#### ADMINISTRATIVE RING COMMANDS

When the initializer teletype answers, the initializer process is in the "administrative ring" (ring 1) environment. It types a message to this effect, and waits for the operator to type one of the following requests:

startup to start Multics  
multics to start a special session  
reload to do a reload  
bos to call BOS  
standard to go to the user ring  
shutdown to shut down

If "startup" or "multics" is typed, the initializer leaves the ring 1 environment and comes up in the "user ring" (ring 4) environment. If "startup" was typed, the initializer proceeds to set up the User Control system to allow users to log in. In any case, the initializer then requests an initializer command from the operator console.

USER-RING INITIALIZER COMMAND SUMMARY

abs maxu 3	Set max number of absentees to 3
abs stop	Stop absentees (run to completion)
abs start 3	Start up absentee and set max to 3
abs bump abs02	Bump off absentee user on line 2
abs bump Name Proj	Bump off absentee user "Name.Proj"
abs bump * *	Bump all absentee users.
abs cancel abs03	Bump and don't restart user on line 3
abs cancel Name Proj	Bump and don't restart "Name.Proj"
abs cancel * *	Bump and don't restart all absentees
add270chan	Add second DSU-270 channel
addcpu b 7	Add cpu "b" on port 7
addmem e	Add memory "e"
admin	Enter "admin" mode
attach tty789	Attach "tty789" to answering service call BOS
bos	call BOS
bump tty789 MM "message"	Bump user on channel "tty789"
bump Name Proj MM "message"	Bump user "Name.Proj" in MM mins.
bump * * MM "message"	Bump all users (except daemons)
del270chan	Delete second DSU-270 channel
delcpu b	Delete cpu "b"
delfmem e	Delete memory "e"
detach tty789 "message"	Detach channel "tty789" & bump user
detach Name Proj "message"	Bump "Name.Proj" and detach channel
detach * * "message"	Bump all users & detach channels
development_reload	Reload development=system tapes

USER-RING INITIALIZER COMMAND SUMMARY

down hhmm HHMM "message"	Schedule auto shutdown at time hhmm, tell users reason is "message", back up at HHMM.
exec -arjs-	Execute special commands
force_reset	Force answering service to reset itself
go	Second half of initialization
hmu	Print how many users logged in
maxu 410	Set the maximum "units" to 41.0
mess	Edit "message_of_the_day"
multics	Bring up special session. See "co"
reload	call reloader (ring-4 reload)
remove ttyXXX	completely remove ttyXXX
reset	Release stack for answering service
shutdown	Shut down Multics and call BOS
startup	Start Multics for normal session.
stop	Warn users, then "bump * *" in 3 mins.
storage	Print out current disk/drum usage
sysid 17.5	Change current system ID to "17.5"
terminate tty789 "message"	cause "tty789" to get new process.
terminate Name Proj "message"	cause "Name.Proj" to get new process
unbump Name Proj "message"	cancel bump for "Name.Proj"
unbump tty789 "message"	cancel bump for tty789
unbump * * "message"	cancel bump for all users
warn Name Proj "message"	Send "message" to user "Name.Proj"
warn * * "message"	Send "message" to all users
word xlogin "message"	Make the login-word "xlogin", type "message" at dialup.

USER-RING INITIALIZER COMMAND SUMMARY

who

Type a list of who is logged in

USER-RING INITIALIZER COMMANDS

**Command:** abs maxu

**Effect:** This command sets the maximum number of absentee users allowed in at any one time.

**Usage:** This command is used to change the maximum number of absentee users after absentee is already up. Type

abs maxu N

to set the maximum number of simultaneous absentees to N.

**Errors:** If absentee is not up, or if N is not supplied or illegal, an error message is typed.

USER-RING INITIALIZER COMMANDS

**Command:** abs stop

**Effect:** Stop absentees (run to completion)

**Usage:** This should be done about 30 minutes before "stop" is typed. If a "down" command has been issued, "abs stop" will be issued 30 minutes before the scheduled shutdown time automatically. Type

abs stop

to stop the absentee facility. The absentee programs will not let any more absentees log in, and will wait for all current ones to log out. If all absentees have not logged out in 30 minutes, absentee will automatically bump the remaining absentee users.

If all absentee users log out before 30 minutes, the message

admin: all absentee processes have run to completion

will come up. If not, then the message

admin: bumping all remaining absentee processes

will be typed.

**Error:** If absentee is not up, an error message will be typed.

USER-RING INITIALIZER COMMANDS

**Command:** abs start

**Effect:** Start up absentee

**Usage:** This command starts up the absentee facility, which allows users to submit jobs for deferred execution. Type

abs start N

to start the absentee facility and set the maximum number of simultaneous absentee users to N. If N is not supplied, a default number will be assumed. Currently, this is 1.

If a "down" command has scheduled an automatic shutdown, issuing an "abs start" will automatically schedule an "abs stop" 30 minutes before the scheduled shutdown time.

**Error:** If absentee is already up, an error message will be typed.



USER-RING INITIALIZER COMMANDS

**Command:** abs bump

**Effect:** Bump absentee user

**Usage:** This command is used to cause an absentee user to be bumped. If the absentee job has been declared restartable, the job will be left in the queue and retried again later. This command can be used when shutting down absentee quickly, because of some error, usually at the request of a system programmer. If a user calls and asks to have his absentee job bumped, make sure he does not mean for you to use the "abs cancel" command instead.  
Type

abs bump NAME PROJ

to bump the absentee user with name NAME and project PROJ. Either or both of NAME and PROJ may be an asterisk (\*), meaning everybody.

It is also possible to bump the absentee user on a particular "slot number", just as it is possible to bump regular users by channel number. Type

abs bump absNN

to bump the absentee user on slot NN. These slot numbers are typed by "who".

**Example:** To bump all absentee users, type

abs bump \* \*

**Error:** If the user name or channel is missing, or if the specified user is not logged in, an error message will be typed.

USER-RING INITIALIZER COMMANDS

**Command:** abs cancel

**Effect:** Bump absentee user, do not restart

**Usage:** This command is used to cause an absentee user to be bumped. It differs from "abs bump" in that restartable absentee requests will be removed from the queue, and not restarted. Use this command to get rid of an absentee job that is in trouble (for instance, one that seems to be re-issuing itself in a loop, or one that calls for a tape which does not exist) or when a user requests that his job be bumped. Type

abs cancel NAME PROJ

to cancel the absentee user with name NAME and project PROJ. Either or both of NAME and PROJ may be an asterisk (\*), meaning everybody.

It is also possible to cancel the absentee user on a particular "slot number". Type

abs cancel absNN

to cancel the absentee user on slot NN. These slot numbers are typed by "who".

**Example:** To cancel all absentee users, type

abs cancel \* \*

**Error:** If the user name or channel is missing, or if the specified user is not logged in, an error message will be typed.

USER-RING INITIALIZER COMMANDS

Command: add270chan

Effect: Add additional DSU-270 channel to Multics configuration

Usage: This command is issued by the operator to add a second DSU-270 channel. Type

add270chan

to add the channel after setting switches as described in MOSN-171.

USER-RING INITIALIZER COMMANDS

**Command:** addcpu

**Effect:** Add cpu to Multics configuration

**Usage:** This command is issued by the operator to add a CPU.  
**Type**

addcpu CPUID PORT

to add the cpu with id CPUID and processor port PORT. The command will give very full instructions and ask you whether all switches are set before starting the added cpu. Consult MOSN-160 for more details.

Making a mistake in adding a cpu can crash the system.

**Example:** To add CPU B on port 5, type

addcpu b 5

USER-RING INITIALIZER COMMANDS

**Command:** addmem

**Effect:** Add a memory to the Multics configuration

**Usage:** This command is issued by the operator to add a memory. Only memories which are defined by BOS cards at bootload time can be added. Type

addmem MEM -CTL-

to add the memory with id MEM. Specify the second argument, CTL, only if you must specify the control processor for this memory. The command will give very full instructions and ask you whether all switches are set before starting the added memory. Consult MOSN-160 for more details.

USER-RING INITIALIZER COMMANDS

**Command:** admin

**Effect:** Enter "admin" mode

**Usage:** Certain commands can only be done from the initializer. These include most file-system operations involving the root directory, and any operation which requires the initializer's access control name, "sys\_control.a". Admin mode allows the operator to use the initializer console to execute normal Multics commands. Because the initializer has extraordinary power and special limitations, admin mode should only be used at the request of a system programmer or system administrator. To enforce this, a password is required in order to enter admin mode. Type

admin

to enter admin mode. The machine will respond

Password

and turn off the printer. Type the password. The system should then say "entering admin mode". Execute any desired commands, and then type the command

ame

(or "admin\_mode\_exit")

to return to initializer command level.

**ERRORS:** If the wrong password is typed, an error comment will be typed out and admin mode will not be entered.

USER-RING INITIALIZER COMMANDS

**Command:** attach

**Effect:** Attach channel to answering service

**Usage:** Sometimes it is necessary to attach an additional channel to the answering service so that users may use it for logins. This may be because the channel was not in the "lines" file when the system was being started up, or because the channel was removed either manually or due to an error. Type

attach ttyXXX ttyYYY ...

to cause the channels listed to be attached to the answering service. The arguments may be of the form ttyXXX, where XXX is a GIOC channel number, or netXXX, where XXX is a network channel number.

**Errors:** If the channel ID is mis-typed, or is the initializer's channel number, or is already attached, an error message will be typed.

USER-RING INITIALIZER COMMANDS

Command: bos

Effect: Call BOS

Usage: This command causes BOS to be entered. All Multics operation is suspended.

When the system is in trouble, it is sometimes necessary to enter BOS to use the DUMP, PATCH, or BLAST commands. Type

bos

to enter BOS, switch 6 should be set before typing "bos" unless the operator wants to simulate a crash. Typing

GO

on the BOS console will cause Multics to be restarted.



USER=RING INITIALIZER COMMANDS

**Command:** bump

**Effect:** bump user

**Usage:** This command causes a user to get an immediate automatic logout, or an automatic logout in a specified time. It does this by causing the initializer to signal itself to bump the user, so if the initializer is so sick that it can't handle logins, "bump" probably won't work either. Type

bump NAME PROJ MM "MESSAGE"

to cause the user with name NAME and project PROJ to be bumped after MM minutes. The string MESSAGE will be typed on the user's console. If MM is omitted, the user will be bumped immediately. If MESSAGE is omitted, the user will not be told why he is being bumped. Either or both of NAME and PROJ may be asterisk (\*), meaning everybody. Users with the "nobump" privilege, like the SysDaemon processes, cannot be bumped by this form of the command.

Type

bump ttyXXX MM "MESSAGE"

to cause the user on GIOC channel ttyXXX to be bumped. This is the only way to bump a user with the "nobump" privilege.

Sometimes, the "bump" command will appear to work -- the message "Name,Proj bumped" will come out -- but the user will not be logged out. This may happen if the user's answer table entry is in an inconsistent state. If this happens, try the "remove" command on the user's TTY channel.

See the "abs bump" command for instructions on bumping absentee users.

**Errors:** If the named user is not logged in or has the "nobump" privilege, an error comment will be typed. If the bump is by channel number and the channel is not found, an error message will be typed.

USER-RING INITIALIZER COMMANDS

Command: del270chan

Effect: Delete second DSU-270 channel

Usage: This command deletes the second DSU-270 channel. Type  
del270chan

and then configure the channel out as instructed in MOSN-171.

USER-RING INITIALIZER COMMANDS

**Command:** delcpu

**Effect:** Delete cpu

**Usage:** This command removes a CPU from the Multics configuration. See MOSN-160 for more instructions. Type

delcpu CPUID

to delete the cpu with id CPUID. Instructions for changing the control processor switch will be given.

USER-RING INITIALIZER COMMANDS

**Command:** delmem

**Effect:** Delete memory

**Usage:** This command removes a memory from the Multics configuration. See MOSN-160 for more instructions. Type

delmem MEMID

to delete the memory with id MEMID.

USER-RING INITIALIZER COMMANDS

**COMMAND:** detach

**Effect:** Detach channel & bump user

**Usage:** This command causes a channel to be removed from the answering service. It will no longer answer the telephone. If any user is logged in on the channel, he will be bumped. This is done by signalling, like "bump". **TYPE**

detach NAME PROJ "MESSAGE"

to detach the channel which the user with name NAME and project PROJ is on. If MESSAGE is given, the message will be typed on the user's console. If it is not given, the user will not be told what is happening. Either or both of NAME and PROJ may be asterisk (\*), meaning everybody.

**Type**

detach ttyXXX "MESSAGE"

to detach the channel whose id is ttyXXX.

If the message "ttyXXX detached" comes up, then the detach has been signalled. If the user on the channel does not log out shortly, then the answer table entry for the channel may be in a state which does not allow detaches. Try the "remove" command.

**ERRORS:** If an incorrect channel name is input, an error message will be typed out.

USER-RING INITIALIZER COMMANDS

**Command:** development\_reload

**Effect:** Reload development/system tapes

**Usage:** This command is typed on the development system initializer after the system library dump tapes have been reloaded, in order to set the development machine up for a test session. Type

development\_reload

to perform this setup.

USER-RING INITIALIZER COMMANDS

**Command:** down

**Effect:** Schedule auto shutdown

**Usage:** This command schedules an automatic shutdown for some later time. When the scheduled time comes, all users will be bumped with three minutes' warning. Type

down TIME BACK REASON

to schedule an automatic shutdown at time TIME. TIME must be a military time; it refers to the next possible such time, so that you cannot schedule a shutdown more than 24 hours in advance. BACK is another military time, which will be announced to users as the time when the system will come back up. REASON is the reason for the shutdown, as a character string. If it contains more than one word, it must be enclosed in quotes.

If absentee is up when the "down" command is issued, an automatic "abs stop" will be set up for 30 minutes before TIME. If absentee is not up when the "down" command is issued, but it is brought up later, the automatic "abs stop" will still be set up for 30 minutes before shutdown.

**Example:** To schedule a shutdown at 5145 AM, and to tell the users that the system will be back at 9, type

down 0545 0900 "Normal Shutdown"

To cancel a scheduled shutdown, type

down 0

**ERRORS:** If the TIME argument is not given or incorrect, an error message will be typed. If a shutdown is already scheduled, an error message will be typed. If an attempt to cancel a shutdown is made and there is no scheduled shutdown, an error message will be typed.

USER-RING INITIALIZER COMMANDS

Command: exec

Effect: Execute special commands

Usage: This function should only be used when a system programmer or administrator has given you instructions. What it does is allow us to make up our own temporary commands for the initializer, by editing a file called "admin.ec". The first argument to exec is the name of the function in "admin.ec" which is selected. Type

exec FUNC ARGS ...

to execute function FUNC.

The current functions are

dump	dump answering service
tdump styXXX	dump channel table
sdump	short dump of answering service
month	monthly reset of answer table
trace_on	trace answering service
trace_off	stop trace
copy_dump	copy "fast" dump
salv	print online salvager output
network	start up network
abs_dump	dump absentee
set_fdump	set FDUMP number
sdn, set_fdump_number	..
create_ddd	re-creat daemon_dir dir
net_stop	stop network
net_restart	restart network
net_remove	remove network channel



USER-RING INITIALIZER COMMANDS

**Command:** force\_reset

**Effect:** Force answering service to reset itself

**Usage:** This command is like the "reset" command but does additional resetting. If administrators are unable to "install" system tables, this function can sometimes clear the jam. Type

force\_reset

to force a reset.

USER-RING INITIALIZER COMMANDS

Command: go

Effect: Second half of answering service initialization

Usage: This command causes all channels attached to the answering service to be initialized, so that they will answer the phone. It is the second half of "startup". Typing "multics" and then "go" is just like "startup" except that the login word is set to junk, so that only users who know the special word can log in. Type

go

to cause all lines in the "lines" file to be initialized.

USER-RING INITIALIZER COMMANDS

Command: hmu

Effect: Print how many users logged in

Usage: This command prints how many users are logged in. Since it also prints the system ID, it can be used to check the success of a "sysid" command. Type

hmu

to get the following message:

```
Multics SYSID; INSTALLATION  
Load = XX.X out of YY.Y units; users = ZZ  
Absentee users = W; Max absentee users = K
```

USER-RING INITIALIZER COMMANDS

**Command:** maxu

**Effect:** Set the maximum number of load units

**Usage:** This command alters the maximum number of load units allowed on. If it is set to below the current number of units, no users are bumped, but only those users with "guaranteed login" privilege can log in. Type

maxu NNN

to set the maximum number of load units to NNN/10.

**Example:** To set the maximum load to 41.3 load units, type

maxu 413

**Error:** If NNN is not given or is illegal, an error message will be typed.

USER-RING INITIALIZER COMMANDS

**Command:** mess

**Effect:** Edit "message\_of\_the\_day"

**Usage:** This command invokes the Multics "edm" editor to edit the file "message\_of\_the\_day", which most (but not all) users print out automatically when they log in. Type

mess

to edit the message. The system will reply

Edit.

in red, and accept edit requests. Some of the legal requests are:

i	line	to insert text
d		to delete a line
n		to go to the next line
p		to print the current line
=		to back up a line
w		to write the message out
q		to exit from edm, back to initializer command level

There are many other requests, and options for these requests. Consult the MPM if you need to know more.

**EXAMPLE:** To insert a whole new message, the following sequence of commands and edit requests might be used:

```
mess
Edit.
d99
EOF
iSpecial shutdown at 04:45 for PM.
c/PM/Preventive Maintenance/
Special shutdown at 04:45 for Preventive Maintenance.
w
q
```

It is a good idea to keep the message brief, but not cryptic, and to use no lines longer than 80 characters, for the convenience of users at Teletypes.

USER-RING INITIALIZER COMMANDS

**Command:** multics

**Effect:** Bring up special session.

**Usage:** This command initializes the answering service, but does not answer the telephones. It is the first half of a "startup". A junk login word will be made up, which the users must use to log in on this special session. Type

multics

to initialize the answering service and make a junk login word. Then, type "go" to cause the lines to answer. To revert to a normal session, type "word login".

USER-RING INITIALIZER COMMANDS

Command: reload

Effect: Call reloader

Usage: This command initiates a ring=4 reload. This is rarely used, since segments from rings 1, 2, and 3 will not be restored correctly. A warning message will be typed. Type

reload

to call the reloader.

USER-RING INITIALIZER COMMANDS

Command: remove

Effect: Remove channel from system

Usage: This command is the opposite of "attach". When a channel is removed, the answering service stops paying any attention to it. If a user is on the channel, he is immediately dumped, with no message. This command should not be used unless the user complains of channel trouble, and cannot be bumped. Once a channel is removed, the telephone associated with the channel will not answer and the channel cannot be used for logins again until an "attach" command reattaches it to the answering service. Type

remove ttyXXX ttyYYY ...

to remove the channels ttyXXX, ttyYYY, etc.



USER-PING INITIALIZER COMMANDS

Command: reset

Effect: Release stack for answering service

Usage: This command is used after a message of the form

system\_control\_: Error: ...

has come out. If a dump of the initializer is wanted, "exec dump" should be typed first. This command should be tried if the initializer seems to be in trouble. Type

reset

to reset the initializer.

USER-RING INITIALIZER COMMANDS

**Command:** shutdown

**Effect:** Shut down Multics supervisor and call BOS

**Usage:** This command is used after all users are logged out to make a normal exit from Multics. Type

shutdown

to shut the system down. If any users are still logged in, the system will ask if you really want to shut down. Usually, you should not. Answering "yes" causes an intentional crash. Answering "no" returns you to initializer command level so that you can bump the users.

This command should only be issued after a "stop" command, unless this is the end of a special session in which "startup" or "go" was never typed.

USER-RING INITIALIZER COMMANDS

**Command:** startup

**Effect:** Start Multics operation for normal session.

**Usage:** This command is usually the first thing the operator types when bringing up Multics for a normal user session. Type

startup

to initialize the answering service and cause all channels to answer.

USER-RING INITIALIZER COMMANDS

**Command:** stop

**Effect:** Warn users, then "bump \* \*" after 3 minutes

**Usage:** This command is used to begin the shutdown process.  
**Type**

stop

to cause all users to get a message of the form

```
*****  
From Operator: Multics will shut down in 3 minutes  
*****
```

The "stop" command also executes a "word shutdown" command, so that no more users may log in. After three minutes, the system will automatically execute a "bump \* \*" to bump all users. Users with the "nobump" privilege will not be bumped.

The next step in the shutdown procedure is to let the daemons and absentee finish up and log out. Then, type the "shutdown" command.

Issuing the "stop" command again will not cause the bump to be signalled again or the message to be re-sent. If all users are logged out, the "stop" command will say

admin: all users are out. You may shut down.

If you type "stop" and then change your mind, do the following:

```
unbump * * "shutdown cancelled"  
word login
```

**Errors** No arguments are allowed. If one is given, an error message is typed. Do not confuse this command with "abs stop".

USER-RING INITIALIZER COMMANDS

**Command:** storage

**Effect:** Print out current disk/drum usage

**Usage:** This command causes the current level of use of all storage devices to be typed out. Type

storage

to see the current level of use of the disks and drum.

This command calls the "fsm" command to do the actual printing. The information of use to an operator is on the rows labeled "Left" (the actual number of records left on the device) and the two rows giving the counts of "N Errors" (non-fatal errors) and "F Errors" (fatal errors).

USER-RING INITIALIZER COMMANDS

**Command:** sysid

**Effect:** Change current system ID

**Usage:** This command is used to change the system ID typed out by the "who" command and when users dial up. Type

sysid NAME

to change the system id to NAME.

**ERRORS:** If NAME is not given, an error message will be typed.

USER-RING INITIALIZER COMMANDS

**Command:** terminate

**Effect:** Cause user to get new process

**Usage:** This command causes the initializer to signal itself that a user should have his old process destroyed and a new process created for him. Type

terminate NAME PROJ "MESSAGE"

to terminate the process for the user with name NAME and project PROJ. The string "MESSAGE" will be typed at the user's console if present. Either or both of NAME and PROJ may be asterisk, meaning everybody.

Type

terminate ttyXXX "MESSAGE"

to cause the user whose channel is ttyXXX to get a new process.

This command is only to be used if the user calls UP and requests that his process be terminated.

**Example:** To cause all users on the project "Multics" to get a process termination, type

terminate \* Multics

**Error:** If the named user is not logged in, an error message will be typed.

USER-RING INITIALIZER COMMANDS

**Command:** unbump

**Effect:** cancel a pending (timed) bump

**Usage:** This command cancels a request to bump a user. It cannot be used unless the user has been given some "grace time" in which to clean up and log out. Type

unbump Name Proj MESSAGE

to cancel a bump for "Name.Proj".

To cancel a bump on a given channel, type

unbump ttyXXX

**Errors:** If the user is not logged in, the command will type an error message.



USER-RING INITIALIZER COMMANDS

**Command:** warn

**Effect:** Send message to user

**Usage:** This command is used to blast a message onto a user's typewriter, right in the middle of whatever other output he is doing. Type

warn NAME PROJ MESS

to send the message MESS to the user with name NAME and project PROJ. Either or both of NAME and PROJ may be asterisk, meaning everybody. If MESS contains more than one word, it must be enclosed in quotes.

This command should not be used for casual communication, because it may splatter the message right in the middle of something the user is typing out. Some users have complained that their output was ruined when one of these messages was sent to them. Use the command only when the system is coming down shortly, or is likely to crash, or when you have an urgent message for a particular user whom you cannot reach by telephone.

**EXAMPLE:** To send a message to "Jones,Multics", type

warn Jones Multics "Can't find your tape. Call x5948"

If the user "Jones,Multics" is logged in, he will receive a message of the form

```
*****  
From Operator: Can't find your tape. Call x5948  
*****
```

**ERROR:** If the user is not logged in, or if some argument is missing, an error message will be typed.

USER-RING INITIALIZER COMMANDS

**Command:** word

**Effect:** Change login word and dialup buffer

**Usage:** This command can be used to change either the login word or the dialup buffer typed out when a user dials up, or both. Type

word LOGINWD MESS

to change the login word to LOGINWD and the dialup buffer to MESS. If MESS contains more than one word, it must be enclosed in quotes. MESS may be omitted. If it is, then if LOGINWD is "login" the message buffer is reset; if LOGINWD is "shutdown" the message buffer is set to "Multics is shutting down"; if LOGINWD is anything else, the message buffer is set to "Special session in progress".

**EXAMPLE:** To leave the login word as normal, but to type a message to all users at login, type

word login "Only one CPU until 1300"

To set up a special session, type

word secret "Test session until 0945"

**ERRORS!** If an illegal login word is used, or if no word is specified, an error message will be typed.

USER-RING INITIALIZER COMMANDS

**Command:** who

**Effect:** print list of logged-in users

**Usage:** This command causes the list of users logged in to be typed. Type

who

to get a list of all users, showing name, project, channel ID, terminal ID, weight, time of login, and flags.

Anonymous users are flagged with a "\*" before the user name. Users who don't list on a regular "who" issued by normal users are flagged with an "N". Users with the "nobump" privilege are flagged with a "+". (These users can only be bumped by channel ID). Users who may be bumped by others in their project, but whose "grace" has not run out are flagged with ">". Users who have been bumped, but still have some of their three minutes' warning time left before automatic logout are flagged with "X". Absentee users are listed after all regular users.

**Example:** Here is a sample of the output.

```
Multics 15.21; MIT, Cambridge, Mass.  
Load = 5.0 out of 54.0 units; users = 5  
Absentee users = 1; Max absentee users = 3  
System up since 08/29/71 1752.5  
Last crash was at 08/29/71 1712.5
```

Login at	TTY	Load	Chan	PN	User ID
08/29/71 1754.2	412	1.0	tty218	+	IO.SysDaemon
2240.1	226	1.0	tty100	>N	Repair.SvsAdmin
2245.0	none	.5	tty111		*Smith.class
2247.1	300	1.0	tty98		Washington.Multics
1755.8	none	1.5	abs1	+	Backup.SysDaemon