

SYSTEMSOFTWARE
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TO: Distribution
SUBJECT: ZAX DOWNLOADER

The ZAX downloader is now installed on both Barbie and Ken (VAX 1 and VAX 2). The manual page is attached.

Programmers: Ray Roux, et al.

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zax - ZAX download program

SYNTAX

zax [-d] [-b] [-n] [-f filename] [file]

DESCRIPTION

Zax downloads a program into the Zax Emulator. With the ZAX you may interactively debug programs written in Z80. You may set breakpoints, single step, trace execution and modify memory (see the Zax manual for a complete list of commands).

The zax command will connect your terminal to the ZAX emulator, sending all of your input to the ZAX instead of to UNIX. In this mode, none of the UNIX commands will work. To get back to UNIX, you must reset your terminal (hit the SET-UP key and then press 0).

Zax will search the directory it's called from for a configuration file named zax.h which contains a list of setup options (see below for the format), if it does not exist then it will use a set of default setup options (see below). The -n flag causes zax to not send any setup options. The -b flag causes zax to use both the default setup options and the configuration file, it may be used in conjunction with the '-f' flag. The -d flag causes zax to use the just the default setup options even if the configuration file exists. The -f filename flag causes zax to use 'filename' as the configuration file rather than the 'zax.h' configuration file or the default setup. The options, both default and configuration, are sent out prior to the program download.

If you supply the file argument, the contents of the given file are downloaded to the ZAX before you are connected. It is assumed that file contains INTEL hex format records. If it does not or if the ZAX is in a funny state, the system will hang and you will have to reset the terminal and the ZAX to get going again.

Once you are connected to the ZAX, you can enter ZAX commands (in upper case, please) to debug your program. All of the ZAX commands consist of a single character mnemonic followed by the parameters.

COMMAND SUMMARY

- A Assign the I/O device
- B Specify the break point
- C Convert hex to decimal and vice versa
- D Display contents of memory
- E Search memory
- F Fill memory with specified data

```

G   Go/execution
H   History
I   Set execution mode
L   Load data in intel format
M   Memory transfer or compare
N   Change contents of memory via Z80 code
P   Port command
R   Register display/modify
S   Set memory map
T   Set trace mode
W   Set offset register
X   Examine/modify contents of memory

```

DEFAULT SETUP OPTIONS

The minimum setup required to run a loaded program is to have the incircuit mode set to 1 (I1) and for the user memory map to define the screen area of the target (use S U,3000,37FF for the Aquarius). The following options are sent to the Zax emulator if the zax.h configuration file is not found or if the '-d' flag is used:

```

S U,0,47FF - sets the user map area
I1         - puts it into incircuit mode 1
B:0S      - enables software breaks

```

CONFIGURATION FILE FORMAT

The configuration file 'zax.h' or the file you name after the '-f' flag may be used to setup user specific options. The file must be in the proper format and contain only setup commands, commands that display data will not work, nor will the 'G' (Go) command.

The file may contain blank lines and spaces between the parameters, the letters must be UPPERCASE. An '*' in the first column denotes a comment line. The last line of the file must have a '\$' in the first column as an end of file delimiter. An example file follows:

```

* Configuration file for mattel.hex

* put it into incircuit mode 1
I 1

* set the user map
S U,0,3FFF

* turn on 'trace all' at C000
T:0A,C000

$

```

CIT-101 SETUP

The Zax and the terminal are connected via a straight (not switched) cable from the terminal aux port to port A of the Zax. The CIT-101 must have the D setup mode. To get it, do the following:

1. goto setup mode B
2. hit control shift X
3. hit 5 twice
4. hit control s to save it

The CIT-101 should have the following 'D setup' mode:

```
0011 1100 101 FILL=0 PT SPD 9600 PR SPD 9600
```

Be sure that the scroll mode (setup B) is set to 'jump' otherwise the display commands will not come out right.

ZAX HARDWARE SETUP

The S/M switch (near port A) should be in the 'M' position. The clock switch should be in the 'EXT' position. When turning the power on be sure to turn the power on the target machine (Aquarius) first and then the ZAX.

FILES

zax.h - configuration file in directory where zax is called

DIAGNOSTICS

If the '-f' flag is used and the file following it is unreadable you'll be asked if you want to use the default options, typing a 'n carriage return' will get you out.

BUGS

If the program has problems downloading (eg noisy lines, etc.) it will kick you out rather than trying to resend. If it looks like things are in a hung state and you want out, reset the terminal - if nothing still happens try hitting a 'control u' (nak). If the configuration file does not have a '\$' in the first column of the last line the download will hang forever.