Setting up Auto Boot

ROM-MJS supports automatic booting but requires a few things to be setup before the system will boot automatically. The intention is for the system to boot directly into a user's program at power up or when the reset button is pressed. This is useful where the system is unattended and needs to automatically recover from a power loss.

For the system to auto boot the following is required:

- Console selection timeout
- Disk partition to boot marked as 'boot' in partition table
- Operating system configured to execute a desired command on boot.

These requirements are discussed in the following sections

Console selection timeout

The Multicomp basic monitor supports console selection between the VGA terminal and the first serial port. To select a specific console, just press the space bar when prompted at power up/reset.

There is a 5 second timeout during console selection and if you don't make a selection within the timeout period the system auto selects a console depending on the state of the serial port.

If a serial device is connected to Serial 1 then the serial port will be auto selected if no console selection is made.
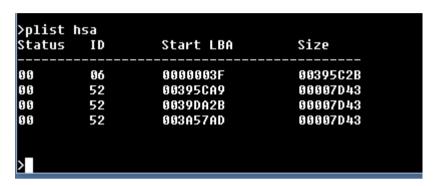
If there is no serial device is connected to Serial 1 then the VGA console will be auto selected if no console selection is made.

Auto Boot Disk partition

The monitor needs to know which partition you want to automatically boot. Since ROM-MJS supports PC style disk partitions (MBR), specifying the auto boot partition is achieved using the Boot Flag in the partition entry (first byte of the 16 byte partition entry). If this boot flag is set to 0x80 then the monitor will consider this partition for auto boot.

Normally only one partition can be marked as 'boot' and the monitor will select the first partition marked as 'boot' when auto booting.

To view the status of the disk partitions use the PLIST command in the monitor or under CP/M.

```
>plist hsa
Status   ID        Start LBA        Size
-----------------------------------------
00       06        0000003F         00395C2B
00       52        00395CA9         00007D43
00       52        0039DA2B         00007D43
00       52        003A57AD         00007D43

>
```

The status field shows the current value of the Status byte for each partition. Currently no partition is set for auto boot.

Marking a partition as auto boot.

To change to boot flag, any partition editor can be used as this is a standard PC partition parameter.

ROM-MJS includes an FDISK style partition utility which can be used. Future versions of the monitor will include a command to list and specify the auto boot partition.

To mark a partition as auto boot do the following steps:

1. Boot CP/M 2.2 and execute the HDPART utility specifying the disk device in the command line (eg. hdpart hsa)
2. Use the 'A' command to toggle the boot flag
3. Specify the partition you want to auto-boot. Note the first partition is the FAT partition and must not be selected for auto boot.
4. Write the modified partition table back to the disk using the 'W' command
5. Use the PLIST command to verify the correct partition has been selected.

The following screenshot shows an example session setting HSA2 as the auto boot partition.

```
Extended Z80 Debug Monitor Version 0.8i by Max Scane September 2015

>b hsa2
Booting CP/M 2.2

CP/M-80 Version 2.2C
For The N8VEM Series SBCs (HAL)
Console is: TT1
C>plist hsa
Device Code is 09
Status   ID        Start LBA        Size
----------------------------------------
00       06        0000003F         00395C2B
00       52        00395CA9         00007D43
00       52        0039DA2B         00007D43
00       52        003A57AD         00007D43


C>hdpart hsa
HDPART Version 0.2 for HAL by Max Scane

Command (m for help): a

Partition number (1-4): 2
Command (m for help): w

The partition table has been altered!
Resetting the disk subsystem.

C>plist hsa
Device Code is 09
Status   ID        Start LBA        Size
----------------------------------------
00       06        0000003F         00395C2B
80       52        00395CA9         00007D43
00       52        0039DA2B         00007D43
00       52        003A57AD         00007D43


C>
```

Specifying a command to be executed at boot.

This task is operating system dependant. CP/M 3 and MP/M II have a native capability and the ROM-MJS version of CP/M 2.2 has this feature added as part of the BIOS.

- CP/M 2.2. If present, the AUTOBOOT.COM command will be executed at cold boot only.
- CP/M 3. If the file PROFILE.SUB is present at cold boot, the contents of the file will be processed by the 'SUBMIT' command automatically.

The following screen shot shows an auto boot sequence using the serial console, and CP/M 2.2 with the STAT command copied to AUTOBOOT.COM

```
Press Space to Activate Console
TT1     OK
CPU     OK -- Cyclone IV B SoC
RAM #1  OK
RAM #2  OK
SD Card OK

Boot load completed

Multicomp Loader 0.1
Booting CP/M 2.2

CP/M-80 Version 2.2C
For The N8VEM Series SBCs (HAL)
Console is: TT1
A: R/W, Space: 10k
C: R/W, Space: 7980k


C>
```