Creating a MMS CP/M 3 System

Customize Modules:

BIOS modules that require customization, such as changing port numbers, must be done by editing the source code and re-assembling the module.

- Edit source, make changes, save.
- RMAC module

One exception is DEFSASI3 which can build the custom-configured CP/M 3 module REL file directly.

It may also be desirable to customize LPTBL.ASM to code the default drive selection table. Without this, the drive selection table will be "empty" and the BIOS will not have any disks available - unless SETUP is run to create a valid drive selection table.

Another customization may be to set the default floppy drive modes. This and LPTBL may eliminate the need to run SETUP after creating the BNKBIOS3.SPR.

Create BNKBIOS3.SPR:

```
LINK BNKBIOS3=MBIOS3,CHRIO3,{disks},END,LPTBL,{rtc},{mem},GETDP,SCB[B,OS,NR]
```

For *{disks}* choose one or more of:

M316'3
M320'3 *
Z37'3
Z17'3
CVS'3
RD512K'3

* **M320'3** may be replaced by modules like **M320F420**, as produced by DEFSASI3.

For *{mem}* choose exactly one of:

MEM318
MEMX2H8
MEM512K

For *{rtc}* choose exactly one of:

NORTC
RTC72421

- Exact order of modules after **END** is not normally significant, except that **SCB** must be last.
- **MBIOS3** must be the first. Only device driver modules can be between **MBIOS3** and **END**.
- For LINK commands exceeding 128 characters, use T.B.D.
- You will probably want to setup SUBMIT files for the link commands you commonly use.

Configure new BNKBIOS3:

```
SETUP BNKBIOS3.SPR
```

Select “Set logical/physical drive assignments” and clean up (customize) drive selection table. Be sure to choose “F6(BLU) = End and update” even if no changes were made, as this initial drive selection table was created by SETUP based on disk modules that were linked.

Select the floppy drive module to customize initial drive/media modes, if desired. Be sure and use “F6(BLU) = End and update” as appropriate to save changes.

Generate CPM3.SYS:

This step may also be initiated from SETUP (TODO: caveats).

```
GENCPM
```

If there exists a file GENCPM.DAT on the drive, you will be prompted whether to use that for defaults.

You will be prompted whether to write a new GENCPM.DAT file. Maintaining an up-to-date GENCPM.DAT file can speed up the system generation process.

You will next be prompted for the various configuration parameters. Most are user preferences, except:

- Top page of memory: always “FF” for MMS CP/M 3
- Bank switched memory: always “Y” for MMS CP/M 3
- Common memory base page:
  - Use “E0” for the default MEM318 configuration
  - Use “C0” for MEMX2H8 or MEM512K

MMS CP/M 3 drivers do not specify buffers to be configured by GENCPM, therefor you should never get prompted for specific memory bank information. If you see those prompts, something has gone wrong.

WARNING: Normally the BNKBIOS3.SPR will reside on a disk other than A: (the boot disk), and GENCPM will be run on a disk other than A:. If GENCPM creates the CPM3.SYS file on A:, and it has configuration mistakes, you may no longer be able to boot that disk. It is advisable to always keep a safe copy of your bootable CP/M3 to ensure configuration mistakes do not render your system unbootable. This may require, for example, initially configuring BNKBIOS3.SPR to boot from a floppy, and then later running SETUP and GENCPM again to reconfigure it for the SASI – after testing to ensure that the BNKBIOS3 is viable. Having multiple bootable SASI partitions is also a good approach.

Install CPM3.SYS:

Copy (e.g. PIP) the CPM3.SYS file to a bootable disk. The target disk must be CP/M 3 bootable (contain the CP/M 3 Loader system on the boot tracks).

Making CP/M 3 Bootable Disks:

NOTE: CP/M 3 boot system is a simplified CP/M 2.2 OS. It requires only console I/O and a single disk driver that can read disks (the disk intended for boot).

1. Build a "LDRxxx.COM" file that contains the boot OS:

   ```
   LINK LDRxxx=CPM3LDR,LDRyyy,LDRByyy[OC,NR]
   ```

   The "xxx" is some convenient designation to remember what this loader does. It is often that same as "yyy".

   The "yyy" is the designation used to identify the disk driver. For MMS CP/M 3 these include:

   320
   316 *
   CVS
   Z17
   Z37

   Note that the MMS 77316 floppy driver requires a separate boot module for 5 ¼" disks than for 8" disks. These modules are LDRB5316 and LDRB8316, respectively.

2. Use COPYSYS to put the LDRxxx.COM file onto the boot tracks of the target disk. This program is also capable of doing some reconfiguration of the loader image for the target disk. You can change the media modes for floppies, and the exact physical drive to boot. In addition, COPYSYS may be run under MMS CP/M 2.24 in order to bootstrap a CP/M 3 installation.

3. Copy CPM3.SYS, and CCP.COM if needed, to the target disk. COPYSYS will try to copy CCP.COM to the target disk, and unless a LDRxxx.COM file is specified (as typically done here), it will copy CPM3.SYS. In this case, you will at least need to copy the appropriate CPM3.SYS file to your target disk. You may also need to copy CCP.COM.

Configuring SASI disks:

Normally, DEFSASI3 will be used to configure a system and a SASI disk. DEFSASI3 uses a file DEFSASI3.DAT for the SASI controller and drive specifications. This file need not exist initially (DEFSASI3 can create it with your data), but it is convenient to start with a file containing the data for the controller and drive you use.

1. Start by setting up the controller and drives for your system, in the "Subsystem Data" section. Every time you start DEFSASI3 you will need to tell it what make and model

you are using, but if a complete DEFSASI3.DAT file exists you need not enter the details from scratch each time.

2. Start the “Partition Characteristics” section and define the partition layouts for your drives.
3. Perform the “Drive Initialization” section, checking the controller and drive and then initializing the partition and system data onto the “magic sector(s)”.
4. Run the “Write 'M320xxxx.REL' CP/M 3 SASI module” section to generate the SASI driver for CP/M 3. Use this module in place of **M320’3.REL** in the system generation instructions.
5. TBD: “Drive Characteristics”
6. Run “Update 'DEFSASI3.DAT' file v3.00x” if needed to save changes to drive characteristics.