

MPMPLUS USERS GUIDE

VER. 3.1

05/03/85

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INTRODUCTION

MPMPLUS comes in two versions that can be installed into any MP/M-80 2.1(tm) system and provide a 2 to 3 times improvement in speed for disk intensive applications. It examines your current MP/M system configuration and determines which of two versions of MPMPLUS will be suitable for your system. Once a version has been selected MPMPLUS will install itself into your MP/M TMP. You then run the GENSYS program with guidance from MPMPLUS and create your new MP/M system.

MPMPLUS FEATURES

- MPMPLUS comes in two versions that can be installed into any MP/M-80 2.1(tm) system and provide a 2 to 3 times improvement in speed for disk intensive applications.
- MPMPLUS integrates into the TMP and provides directory buffering and/or a disk system free from unnecessary file system resets.
- In many cases program load times are faster, but the greatest improvement is noticed with systems that frequently open and close files for inquiry or updates.
- Both versions of MPMPLUS may now be used with almost any MP/M system. The systems may or may not currently support caching. MPMPLUS examines your current system configuration and helps you select the best version of MPMPLUS for your application. MPMPLUS then makes the final version ready to GENSYS into your system.
- No common memory is consumed. There is no loss of user TPA.
- MPMPLUS1 uses an extra 256 bytes of banked memory in bank 0
- MPMPLUS2 uses all or most of lower bank 0 as a cache.

BENCHMARK OF FILE OPERATIONS

OPERATION	VANILLA MP/M Seconds	MPMPLUS1 Seconds	Speed Factor	MPMPLUS2 Seconds	Speed Factor
Load Bi280	11	11	1	7	1.6
Go to Menu	20	15	1.3	9	2.2
Open Data File	6	4	1.5	2	3
Load A/P Menu	10	5	2	3	3.3
Load OE System	10	5	2	3	3.3
Load Add Order	20	15	1.3	7	2.9
Load Wordstar	3	3	1	2	1.5
New WS file	4	0.8	5	0.4	10
Open old WS file	4	1.5	2.7	0.7	5.7

SYSTEM USES 4MHZ Z80, SYSGENED FOR 2 USERS, 15 MEG. WINCHESTER

BI280 is a product of Control-C Software Inc.
WordStar is a product of MicroPro International Corp.

FILE REQUIREMENTS

This section introduces you to the three MP/M system files used by MPMPLUS to create your new MP/M system. These three files should already be included on your current MP/M system disk drive. If any files are missing MPMPLUS will inform you during installation time about the missing file and give you detailed information about the file as well as suggest where you may obtain a copy of same.

TMP.SPR

TMP stands for Terminal Message Process. SPR stands for System Page Relocatable, which identifies the TMP as one of the files used by GENSYMS to build a new MP/M system. The TMP is the part of MP/M that reads information typed in on each keyboard connected to your MP/M system. It then passes the typed information or commands to another part of MP/M for execution. The TMP itself is contained in bank 0 or the system bank in MP/M. The program part of TMP resides in the banked part of MP/M and therefore it does not consume any user program area in the larger banks on your system. Note that each user has a TMP for each console, thus a system with consoles 0 to 2 has a TMP0, TMP1 and TMP2. This does not mean that the TMP is repeated 3 times in memory however, as such an arrangement would waste much memory. The TMP program is shared by all consoles and the particular information pertaining to the current state of each consoles' TMP is stored in a unique area of common memory call the TMPD.DAT. In addition typed information to the TMP is stored in a banked memory area called the CONSOLE.DAT area. Since MPMPLUS becomes part of the TMP it resides in banked memory and therefore consumes no user program area in the larger memory banks. The larger banks are numbered from 1 to as high as 7. These banks are typically 48K bytes in size and are used to run your programs for accounting, word processing etc.

MPM.SYS

The MPM.SYS is the actual MP/M system itself. A loader program reads this from disk and stores it in the memory of bank 0. Once it is fully in memory the loader jumps to the cold-start entry point for MP/M and your system comes to life in MP/M mode.

SYSTEM.DAT (optional)

SYSTEM.DAT is a 256 byte file that contains information on the configuration of your MP/M system. Some of the information includes the number of consoles, printers and memory segments. If SYSTEM.DAT is missing, MPMPLUS will re-create it from MPM.SYS.

PERFORMANCE CONCEPTS

DISK CACHE

One method of improving the performance of MP/M is via disk drive caching. With caching, information read from the disk is held in some area of the processors' main memory called a cache buffer. The next time you require information from the disk drive a check will be made to determine if it is in the cache buffer. If it is you will save the time required to get the disk drives' attention and have it locate and read the information you require from disk.

DISK RESETS

Another, not so obvious method, is to some how keep all disks in the MP/M system in a logged-on state. When a disk is first logged on MP/M spends some time reading the directory and generating a special map in memory called the drive allocation map. The allocation map is used to keep track of all the used and un-used space on the disk. The logging on process is time consuming, and when it happens frequently the disk system slows down quite a bit. Unfortunately a lot of software used under MP/M was originally written for CP/M and not upgraded to MP/M standards in every aspect. Some of the software used causes drives to be repeatedly and frequently logged on and off again. Even some MP/M packages cause this problem. Suppressing this action would greatly improve disk performance on the system.

TYPES OF MPMPLUS

MPMPLUS1 implements a feature that prevents time consuming disk resets and re-logs from being initiated by your software. This version of MPMPLUS can speed up disk activity by 2 times on the average. The actual impact MPMPLUS1 has on your system performance is directly related to the number of disk resets issued by your software. In many cases an active accounting and word processing application will be noticeably improved with MPMPLUS1. If you have drives on your system that MUST be reset to change media, MPMPLUS1 and MPMPLUS2 allow you to enter this information before you create an MPMPLUS system so that any number of drives may be reset. Note that it is to your advantage to avoid this situation since a re-settable drive degrades system performance.

MPMPLUS2 implements the same basic feature as MPMPLUS1 and additionally it caches from one to four disk drive directories in the banked portion of memory bank 0. An installation feature in MPMPLUS assists you in selecting from 1 to 9 different cache configurations. In addition MPMPLUS allows you to locate the cache in any un-used part of bank 0. This version of MPMPLUS can speed up disk activity by 3.5 times on the average.

SELECTING THE MPMPLUS FOR YOUR SYSTEM

Basic points to remember:

- 1)MPMPLUS1 is universal and can be used on any MP/M system, whether it currently has some type of cache or not.
- 2)MPMPLUS2 requires at least 4K of memory in bank 0 for the smallest cache and up to 32K for the largest configurations.
- 3) If bank 0 is currently declared on your system memory map and you wish to use MPMPLUS2 you must relinquish some or all of this space. This is seldom a hardship since many programs can barely fit in bank 0, and some such as WordStar will not even run in bank 0.
- 4) Both versions of MPMPLUS prevent disk resets. However you may specify during installation time which disks you wish to remain resettable . This may be necessary if you change diskettes or disk cartridge in the normal course of operations under MP/M.

USING MPMPLUS2 ON SYSTEMS WITH CACHING

MPMPLUS2 may be used on systems with caching provided you meet the following requirements:

FOR SYSTEMS WITH TRACK CACHING

- a) Determine if the cache area is not in the lower part of bank 0 below the MP/M system. If not you should be able to use the area below the MP/M system for MPMPLUS2.
- b) If the track cache is in bank 0 obtain accurate information as to its' location and size. MPMPLUS will let you fit MPMPLUS2 to an unused part of bank 0.

USING MPMPLUS2 ON SYSTEMS WITH CACHING IN AN RSP

Some systems may have a disk cache implemented in an RSP (Resident System Process). If so you may determine which areas in bank 0 are free to fit in MPMPLUS2 just as you would for the track cached system above. You may also wish to install MPMPLUS2 only and not use the RSP cache method. Doing this will free up the area of common memory consumed by the RSP and any banked area consumed by its' BRS (Bank Resident Segment).

FOR SYSTEMS USING FILE MANAGERS SUCH AS MicroB+(tm) or AM80(tm)

MPMPLUS2 helps these systems too. Note that often most of bank 0 below the MP/M system is declared as a user bank to be used as a file cache with these products. You will need to add another bank of memory for the file manager buffer area.

MicroB+ is a product of FairCom
AM80 is a product of Digital Research Inc.

OPERATIONAL CONSIDERATIONS

REMOVABLE MEDIA

You may have one or more disk drives on your system with removable media such as a floppy disk or some type of hard disk cartridge. If you absolutely need to change any of these disks during the course of a typical days operations you must inform MPMPLUS of this during installation. Try to use your system in such a way as to reduce the requirement for removable media. Try to keep the number of removable media drives on your system to a minimum. You may already know from operational experience that you never have to change some of the removable media on your system. In this case consider any such drives as fixed.

CACHE EFFECTIVENESS

The caching scheme in MPMPLUS provides buffer space for the first N directory entries on each selected drive. The number of directory entries (N) cached for each drive, as well as the number of drives with cache support is determined during install time by;

- A) The amount of memory available in bank 0, and...
- B) Your selection of the most suitable option from the list of those satisfied by the above noted memory requirements.

Directory caching was selected since a large amount of disk overhead is attributable to directory searches. In addition the directory is most often at the physical start of a disk drive while the data to be read or written is much further away from the start. Operational experience has indicated that a good way to layout your disk files is as follows:

- 1) frequently used to less frequently used data files at start of disk
(MicroB+ and AM80 users should put index files here)
- 2) frequently used to less frequently used overlay files next
- 3) frequently used to less frequently used programs next
- 4) any .PRL files and the MPM.SYS file

It is to your advantage to use PIP or some other file copy program to create a disk file layout similar to the above. Whether you use caching or not this organization improves the performance on any MP/M system that must reference and update large data bases. Don't feel compelled to make any changes right away however. Take time to consider the demands made on your disk system by your applications and implement any of the above disk layout concepts when your system is not in demand. You may find that as files grow, are added or deleted that you have to re-organize from time to time (say every six months or so).

THE FIRST TIME MPMPLUS EXECUTES ON YOUR SYSTEM IT CREATES A BLANK FILE ON USER AREA 15 OF ALL DRIVES DECLARED AS FIXED. ON SUBSEQUENT STARTUPS IT CHECKS FOR THE FILE ON THE AREA AND RE-CREATES IT IF IT HAS BEEN REMOVED. MAKE SURE ALL "FIXED" DRIVES CONTAIN DISKS FOR SYSTEM START UP.

INSTALLING MPMPLUS

1) Copy the MPMPLUS.COM program from the diskette provided in your MPMPLUS package onto your MP/M system disk.

2) From your MP/M system disk type in the following command to start MPMPLUS;

```
MPMPLUS<CR>
```

The <CR> above signifies your pressing the CARRIAGE RETURN or ENTER key on your keyboard.

3) MPMPLUS will sign on and wait for you to press any key to continue the session.

4) Press any key and MPMPLUS will check your system for all the critical files needed to make a new MP/M system:

It will immediately check for and make back up files of your TMP.SPR (Terminal Message Process), MPM.SYS (MP/M System) and your SYSTEM.DAT (System Data file). If it does not find SYSTEM.DAT it will create one from information in MPM.SYS.

5) MPMPLUS will next double check that SYSTEM.DAT agrees with MPM.SYS. If not it will make a new SYSTEM.DAT to match MPM.SYS.

6) Next MPMPLUS checks the SYSTEM.DAT to determine the options available to you in selecting MPMPLUS1 and MPMPLUS2.

7) Based on the options you select and/or additional information about cache space supplied by you, MPMPLUS prepares a new TMP.SPR for your system.

8) You will next be asked for the number of FIXED drives used on your system. This information will be used to determine how much larger your System Lock List should be as MPMPLUS enters one new item for each fixed drive into the System Lock List.

9) Lastly you will be asked to provide a list of all drives you wish to keep as removable on your system.

10) MPMPLUS will then ask if you wish to have a printout of the new MP/M GENSYS parameters. If so a list of the new parameters will be sent to your printer for your reference when you run the GENSYS program.

11) MPMPLUS exits to the operating system.

12) Make a copy of all the back up files onto a floppy disk or tape.

13) You now run the GENSYS program and use the information provided by MPMPLUS to set new values as required for your system.

14) Reset your system and load your new MP/M with MPMPLUS.

INSTALLATION SCENARIOS

In the following situations we assume that all required files were available on your system disk, MPMPLUS has backed them up and is now displaying a screen of options available to you.

MAIN CACHE MENU

MPMPLUS has determined that you have sufficient space in bank zero to implement a cached version. It has read your SYSTEM.BAC and found that part of bank 0 is currently used by you for program area. It thus knows that you can safely relinquish this space for use as a cache area. You will thus have one less user memory segment in your new MP/M system unless you can install or assign a new user bank at GENSYS time to replace the consumed cache area. Nine versions of the cache option will be displayed and a prompting message will indicate which versions are valid for the memory space in your system. At this menu you may also select the manual installation feature, the non-cached version or quit the program altogether. Check the cache size guide in the manual to determine the significance of the cache option selected by MPMPLUS. The manual installation option is available for any situation of the cached version. It allows you to over ride any cache option selected by MPMPLUS if you have information on bank 0 free space that allows you to set up a different cache size.

MANUAL MENU

When MPMPLUS can not find enough space in bank 0 to create even the smallest cache it will inform you of the size problem, wait for you to strike a key and then display the Manual Menu. Also when MPMPLUS can not find ANY user space in bank 0 it assumes that this space may be used by some current caching scheme on your system. You may then;

- 1) Select a non-cached version of MPMPLUS if no bank 0 space is available for caching.
- 2) Supply information as to any free space in bank 0 not used by your current cache.
- 3) If you know that all memory below the MP/M system is actually free you can inform MPMPLUS of this. MPMPLUS will size the memory and take you to the Main Cache Menu.

The above options (1) and (3) require no detailed information on available memory from the user. Option (2) requires a start and optional end address for cache space however. Suppose your system uses track caching and you have documentation informing you that the track cache consumes bank 0 memory from 0000H or 100H to 2500H (9Kbytes of memory). You will inform MPMPLUS that the first free address is 2500H. You will probably then enter a <CR> for the end address if no other space below the MP/M system is used by your current cache software, otherwise you will enter an ending address to specify the top portion of the MPMPLUS cache.

NON-BANKED SYSTEM

MPMPLUS has determined that you have a non-banked MP/M system and can only use MPMPLUS1. This is an unusual case. It means that you have very little space in your system for program execution as your entire system has access to one 64K bank of memory. If you know for a fact that you have a banked system check to see that you have MPMPLUS installed on the correct system disk as you may have an MPM.SYS for some other version of MP/M on the current disk.

CACHE SIZE GUIDE

The following chart indicates the memory requirements in bank 0 used to create all 9 possible cache options.

CACHE CHARACTERISTICS

Option	Cache Size	Drives	Cached Directory Entries per Drive
1	4 Kbytes	A:	128 cached directory entries
2	8 Kbytes	A:	256 cached directory entries
3	8 Kbytes	A: B:	128 cached directory entries
4	16 Kbytes	A:	512 cached directory entries
5	16 Kbytes	A: B:	256 cached directory entries
6	24 Kbytes	A: B: C:	256 cached directory entries
7	32 Kbytes	A:	1024 cached directory entries
8	32 Kbytes	A: B:	512 cached directory entries
9	32 Kbytes	A: B: C: D:	256 cached directory entries

Hexadecimal equivalents for cache sizes.

1000H = 4K bytes, 2000H = 8Kbytes, 4000H = 16 Kbytes
 6000H = 24 Kbytes, 8000H = 32 Kbytes

MPMPLUS does not touch from 0000H to 0100H in bank 0 as this is reserved for MP/M system variables. Because of this any free space starting at location 0000H will have 100H bytes (256 bytes) added to it automatically by MPMPLUS. Thus a 16K cache based at 0000H will have a top at 4100H. Also note that the larger TMP used in the cached version of MPMPLUS along with the increased Lock List combine to reduce the cache space in bank 0 by 768 bytes (300H).

WHEN SELECTING A CACHE OPTION MAKE SURE YOU SELECT A VERSION THAT CACHES A NUMBER OF DIRECTORY ENTRIES EQUAL TO OR LESS THAN THE NUMBER OF DIRECTORY ENTRIES SUPPORTED BY YOUR DISK DRIVE.

If your system uses one or more Resident System Processes be sure to re-include them during your GENSYS. If you add any additional RSPs you will loose space in bank 0 for caching.

IN ANY CASE BE SURE YOU MAKE A NOTE OF ALL RSPs USED IN YOUR SYSTEM BEFORE YOU CHANGE IT WITH MPMPLUS.

Backup FILE NOTES

As noted earlier MPMPLUS creates back up files from your original system files. The back up files are TMP.BAC, MPM.BAC, SYSTEM.BAC and system.ORG. Be sure to copy these onto a backup disk or tape as soon as possible. The files are backed up in the following manner:

SYSTEM.DAT backed up to SYSTEM.BAC and SYSTEM.ORG

In case of discrepancies between the System Data Page in MPM.SYS and SYSTEM.DAT a new version of SYSTEM.DAT and SYSTEM.BAC will be created to agree with the MPM.SYS System Data Page. Note that SYSTEM.ORG will always remain with the information first contained in your SYSTEM.DAT or System Data Page. In this way you may always copy SYSTEM.ORG to SYSTEM.DAT if the need should arise.

MPM.SYS backed up to MPM.BAC

Your original MP/M system will always be available as MPM.BAC should you have to revert to it. Just copy it to MPM.SYS if needed.

TMP.SPR backed up to TMP.BAC

Your original TMP may be recovered by copying TMP.BAC to TMP.SPR.

One way to do the file recovery is with PIP as follows;

PIP SYSTEM.DAT=SYSTEM.ORG<CR>

PIP MPM.SYS=MPM.BAC<CR>

PIP TMP.SPR=TMP.BAC<CR>

BE SURE TO KEEP YOUR Backup FILES ON THE DISK USED TO CREATE THE NEW TMP.SPR. IN THIS WAY IF YOU RUN MPMPLUS AT A LATER TIME IT WILL NOT CREATE NEW Backup FILES.

ADDITIONAL FILES CREATED

When MPMPLUS prepares a new TMP.SPR it also creates the following files;

TMP1.SPR a non-cached TMP and...

TMP2.SPR a cached TMP set for drives A & B with 512 cached directory entries.

MPMPLUS SUPPLIED FILES

MPMPLUS.COM	Configuration and installation program
MPM1.PAT	MPMPLUS1 patch image for new TMP.SPR without cache
MPM2.PAT	MPMPLUS2 patch image for new TMP.SPR with cache

MP/M GLOSSARY

application software

This is the software executed at individual consoles for the purpose of providing the computer user with a means to carry out the day to day functions required by the work environment such as accounting, word processing etc.

bank 0 or system bank

The first bank of memory in an MP/M system. This bank contains all of the MP/M operating system. Part of the MP/M system is in common memory and part of it is in banked memory. Common memory is the last or top 25% of the system bank. This portion of memory is always available to all programs used in the system (thus common to all).

banked memory

Banked memory in an MP/M system is any block of memory that is not in common memory and which is accessible by issuing a bank select operation to the system memory select hardware. An MP/M system usually contains two to seven blocks of banked memory. Each bank is usually 48 Kbytes (thousand bytes) in size. This memory is used by each user for the loading and running of the application programs.

byte

Generally a unit measure of memory. A byte consists of eight bits. An 8 bit processor most often manipulates data a byte at a time.

cache

An area of memory used to store frequently used information. A disk cache is memory used to store information read from the disk drive. Since the system can access memory hundreds of times faster than a disk drive this type of cache improves the disk system response by allowing the processor to read frequently used disk sectors from memory instead of always returning to the disk drive.

common memory

As noted under "bank 0" this is memory that can always be accessed by any program or process in the system.

directory

A dedicated area on each disk drive that contains a list of all files (programs and data bases) found on that drive. The list includes information on the location and size of each file.

disk log-in

The disk log-in is an operation which reads the disk drive directory for the first time and readys the disk drive for future file operations.

disk reset

An operation that resets a disk drive to the state prior to the logged-in status, thus it is no longer ready for file operations. When it is accessed after a disk reset it must be logged-in again.

disk system reset

Similar to disk reset but it affects all disk drives in the system.

file

A collection of data located on the disk drive. Each file has an associated directory entry (the file name) which identifies its size and location. A file can be any collection of data such as a program, a list of inventory items or customer accounts or a text file created by a your word processor.

kilobyte or Kbyte

1,024 bytes. Used when referring to the size of main memory (the memory used by the system for program execution), or disk memory.

lock list

A data area inside the MP/M system which maintains a record of all open files and locked records currently used by any program that has selected and opened a file on any disk drive.

RSP or Resident System Process

An optional process in the MP/M system that performs some unique operation in the MP/M system. Part or all of an RSP resides in common memory and it may optionally have some part in the banked portion of memory bank 0. It may be thought of as a program that does not have to be loaded from the disk drive. In some cases an RSP executes only at system start up time in order to establish a specific condition required by a program that will be executed at a later time.

system drive

Usually this is the "A" drive in an MP/M system. It generally contains most or all of the programs used on the system.

TMP or Terminal Message Process

The process which displays the user prompt and accepts keyboard commands.