

Copyright (C) Data General Corporation, 1981, 1982, 1983, 1984  
All rights reserved.  
Licensed material - Property of Data General Corporation

Data General Corporation (DGC) has prepared this document for use by DGC personnel, customers, and prospective customers. The information contained herein shall not be reproduced in whole or in part without DGC's prior written approval.

The information presented herein presents guidelines for the memory utilization of MP/AOS Revision 2.00. DGC reserves the right to make changes in subsequent revisions of the operating system which may impact the information presented herein.

The terms and conditions governing the sale of DGC hardware products and the licensing of DGC software consist sole of those set forth in the written contracts between DGC and its customers. No representation or other affirmation of fact contained in this document including but not limited to statements regarding capacity, response-time performance, suitability for use or performance of products described herein shall be deemed to be a warranty by DGC for any purpose, or give rise to any liability of DGC whatsoever.

In no event shall DGC be liable for any incidental, indirect, special or consequential damages whatsoever (including but not limited to lost profits) arising out of or related to this document or the information contained in it, even if DGC has been advised, knew or should have known of the possibility of such damages.

Key  
---

- C- Indicates a code module
- D- Indicates a data module
- m- Indicates a server/mailbox entry
- t- Indicates a connection entry
- n- Number of lines, devices, or items in excess of starter system requirement

Instructions  
-----

The concept of these guidelines is basically simple. We give you the size of an MP/AOS starter system (for Eclipse, uEclipse or Desktop Generation) and you add to it the additional items you have "genned" for your own system. The additional memory that you require can be allocated in three different places. The kernel, supervisor, or hyperspace. The constraints are as follows:

1. All of the additional memory that you cause to be allocated ( Kernel + Supervisor + Hyperspace ), when added to the starter system's physical memory requirement, must not exceed the amount of physical memory of the target system.
2. All of the additional memory that you cause to be allocated for the Kernel, when added to the starter system's kernel memory requirement, must not exceed 31k words.

Using the script file that the Sysgen utility generates, it

is possible to calculate these additional memory requirements.

1. For each item listed below, you must calculate the difference between what is in the starter system and what is in your system. For your convenience, the number of items that are in the starter system are in parentheses after the size.
2. Keep a running total of both additional Kernel memory and additional ( Kernel + Supervisor + Hyperspace ) memory.
3. When you are done, add the additional Kernel memory to the starter system Kernel memory to see if you are close to the 31k word limit. Do the same for the Physical memory requirement.

Description -----	Kernel -----	Supervisor -----	Hyperspace -----
<b>S20 Device Support</b> -----			
(01) ASLM	289-C (140*n)-D (6+2*n)-D	86-C	
(02) Dpd	29-C (1) (81*n)-D (2) (6+n)-D (2)	264-C (1)	
(03) Dph	209-C (1) (81*n)-D (3) (6+n)-D (3)	308-C (1)	
(04) Dpx	22-C (81*n)-D (6+n)-D	226-C	
(05) Lpt	17-C 40-D	125-C	
<b>Eclipse Device Support</b> -----			
(06) Power Fail	276-C		
Alm Restart	81-C		
Dpd/Dph/Dpg Restrtr	22-C		
Dpf Restart	24-C		
Dpj Restart	23-C		
Lpt Restart	19-C		
Tty Restart	36-C		
(07) DG/CS (ALM)	253-C (140*n)-D (6+2*n)-D	23-C	
(08) Dpd	76-C (1) (81*n)-D (2) (6+n)-D (2)	264-C (1)	

(09) Dpf	255-C (1) (81*n)-D (1) (6+n)-D (1)	285-C (1)
(10) Dph	154-C (1) (81*n)-D (2) (6+n)-D (2)	275-C (1)
(11) Dpg	154-C (1) (81*n)-D (2) (6+n)-D (2)	275-C (1)
(12) Dpj	147-C (1) (81*n)-D (1) (6+n)-D (1)	148-C (1)
(13) Dph floppy	20-C (81*n)-D (6+n)-D	308-C
(14) Lpt	17-C 40-D	125-C

#### Desktop Generation Device Support

-----

(15) Aslm	289-C (140*n)-D (6+2*n)-D	86-C
(16) Dph	209-C (1) (81*n)-D (3) (6*n)-D (3)	308-C (1)

#### Any Processor

-----

(17) Master Disk Dismount		
Enabled	315-C	(1040*28)-D
Disabled	132-C	
(18) Memory Dump (diskette)	716-C	
(19) Memory Dump (tape)	480-C	
(20) Error Logging		75-C

#### System Configuration Parameters

-----

(21) Processes	(550*n)-D (1)	(1024*n)-D (1)
(22) System Calls	(30*n)-D (1)	(1024*n)-D (1)
(23) System Buffers		(288*n)-D (4)
(24) System Overlay Buffers		(1040*n)-D (2)

(25) File Information Blocks			(80*n)-D (4)
(26) Task Control Blocks	(61*n)-D	(3)	
(27) Channels	(18*n)-D	(15)	
(28) Global Segment Descriptors	(15*n)-D	(3)	
(29) Attached Segment Descriptors	(4*n)-D	(3)	
(30) Segment Map Blocks	(16*n)-D	(4)	
(31) Overlay Node Descriptors	(9*n)-D	(2)	
(32) Histogram Descriptors	(24*n)-D		
(33) Delimiter Tables	(16*n)-D	(1)	
(34) idef/ldef DCTs	(11*n)-D	(1)	
(35) Time Slicing			
No timeslicing	159-C		
Timeslicing	174-C	(1)	
(36) IPCs/IPSS	231-C		(16*m)-D (16*t)-D
(37) Basic machine differences (for ercc handling)			
Starter System	3-C		
S130 Ercc	181-C		
S140 Ercc	178-C		
C150 Ercc	181-C		
S230/C330 Ercc	181-C		
S250 Ercc	181-C		
S280 Ercc	231-C		
S120 Ercc	179-C		
S20 Ercc	226-C		

## Notes

-----

### Device Support

Every different device you configure causes code to be bound into both the kernel and supervisor. Also, additional kernel data space is usually consumed for every unit on that device (i.e. on a per line basis for a communications multiplexor, or a per unit basis on a disk controller).

### (06) Power Fail

If you request power fail support, different amounts of kernel space are consumed depending on your configuration. The base power fail support code requires 344 words. Also, MP/AOS currently requires a system console so that the TTY restart module is always pulled in. The other modules (alm restart, dpd restart, etc.) are pulled in only if you configured your system with one of those devices.

## (21) Processes

For every process you specify, several resources are generated in addition to the pcb. Each process requested results in the generation of the following:

- (1) pcb
- (1) tcb
- (10) channels
- (3) global segment descriptors
- (3) attached segment descriptors
- (4) map area blocks
- (1) system call (which consists of several resources itself)

## (22) System Calls

For every system call you enter, the following system resources are generated. They are:

- (6) active resource blocks (arbs)
- (1) system stack & map area

A system map area (maintained at the base of the stack) is used to implement a separate map context for each system path executing in the supervisor. An arb is used to record "locks" as they are issued in the supervisor. In addition, the count you enter is used as a low bound for the allowed choices of other system resources. This is done to preclude deadlocks between system paths.

## (23) System Buffers

For every system buffer that you request, the following are reserved.

- (1) System buffer header
- (1) System buffer

Also note that sysgen demands that you have at least two system buffers for every potential system path in order to preclude system deadlocks.

## (24) System Overlay Buffers

For every system overlay buffer that you request, the following are reserved.

- (1) System overlay buffer header
- (1) System overlay buffer

Also note that sysgen demands that you have at least one system overlay buffer for every potential system path in order to preclude system deadlocks.

## (25) File Information Blocks

For every file information block that you request, the following are reserved:

- (1) File information block header
- (1) File information block

-----  
You should bear in mind that MP/AOS does not allocate any data structures across page boundaries. If the system encounters the situation where allocating a data structure would cause that structure to cross a page boundary, it leaves a hole and allocates that structure at the beginning of the next page. Therefore, any computations that you make may be somewhat lower than actual memory requirements since your computations will not account for such fragmentation.

### Starter System Requirements

-----

The memory requirements, and system configuration files for the starter systems are described. From these figures, it should be possible for you to compute the memory requirements of your tailored systems. All figures are in decimal pages.

S/20  
-----

```
    12-kernel
    18-supervisor
    8-hyperspace
-----
    38-system requirements
    28-cli
-----
    66-starter system
```

### S/20 Sysgen Script

-----

MP/AOS SYSGEN -- Rev. 2.00            Sunday January 8, 1984            12:56:42 PM

The following CPU types are available:

- a) S130
- b) S140
- c) C150
- d) C330
- e) S250, C350
- f) S120
- g) S20
- h) S280
- i) DG/10SP
- j) DG/20, DG/30

Which CPU is this system for? (a,b,c,d,e,f,g,h,i,j) [g]: g  
Clock frequency (10,60,100,1000) [100]: 100

=====

Do you want to build a memory resident system? (y,n) [n]: n

=====

Is the system console a Dasher (TM) display? (y,n) [n]: n  
Characters per line (40..132) [72]: 72  
Keyboard characteristics [?cnas+?cech]: ?cnas+?cech  
Display characteristics [?cst+?cnas]: ?cst+?cnas  
Keyboard device code (3..76) [10]: 10

The keyboard is named @TTI

The display is named @TTO

Do you have a 4207 controller(s)? (y,n) [n]: n

Do you have a ASLM ( 4336-S/4336A-S ) controller? (y,n) [n]: n

=====

How many disk controllers are there? (1..12) [3]: 3

The following disk controllers are supported:

- a.) 315 kb diskette (6038/39)
- b.) 10 mb cartridge (6095-N)
- c.) 5 / 12.5 / 15 /25 mb fixed disk and/or 1.25 mb diskette(s)  
(6096, 6101/2/4/5, 6220/22)
- d.) 15 / 50 mb fixed disk on a BMC (6224, 6280)

Choose the appropriate letter for controller # 1 (a,b,c,d) [b]: b

Enter the device code for this controller (in octal) (3..76) [27]: 27

Unit 0

The removable pack is named @DPD0  
The fixed platter is named @DPD4

.....

- a.) 315 kb diskette (6038/39)
- b.) 10 mb cartridge (6095-N)
- c.) 5 / 12.5 / 15 /25 mb fixed disk and/or 1.25 mb diskette(s)  
(6096, 6101/2/4/5, 6220/22)
- d.) 15 / 50 mb fixed disk on a BMC (6224, 6280)

Choose the appropriate letter for controller # 2 (a,b,c,d) [c]: c

Enter the device code for this controller (in octal) (3..76) [26]: 26

Enter the number of disks on this controller (1..4) [2]: 2

Unit 0 is named @DPH0  
Unit 1 is named @DPH1

.....

- a.) 315 kb diskette (6038/39)
- b.) 10 mb cartridge (6095-N)
- c.) 5 / 12.5 / 15 /25 mb fixed disk and/or 1.25 mb diskette(s)  
(6096, 6101/2/4/5, 6220/22)
- d.) 15 / 50 mb fixed disk on a BMC (6224, 6280)

Choose the appropriate letter for controller # 3 (a,b,c,d) [d]: d

Enter the device code for this controller (in octal) (3..76) [25]: 25

Unit 0 is named @DPM0

=====

Do you want to be able to dismount the master disk? (y,n) [n]: n

=====

How many Programmed I/O lineprinters do you have? (0..8) [0]: 0

=====

Do you wish to include a Memory Dump facility? (y,n) [y]: n

=====

Do you wish to Enable Error Logging? (y,n) [y]: y

- a) Log Errors to Console.
- b) Log Errors to a Disk File.
- c) Log Errors to Console and Disk File.

Which type of Error Logging is desired ? (a,b,c) [c]: c

Enter Name of Error Logger Console [@TT0]: @TT0

Enter Pathname to Error Logger File [:SYSLOG]: :SYSLOG

=====

Default System Configuration Parameters are:

Number of Processes : 1  
 Number of Concurrent System Calls : 1  
 Number of System Buffers : 4  
 Number of System Overlay Buffers : 2  
 Number of File Information Block Buffers : 4  
 Number of User's Task Control Blocks : 3  
 Number of User's Channels : 15  
 Number of User's Global Segment Descriptors : 0  
 Number of User's Attached Segment Descriptors : 0  
 Number of User's Segment Map Blocks : 0  
 Number of User's Overlay Node Descriptors : 2  
 Number of Concurrent Histogram Operations : 0  
 Number of Delimiter Tables : 1  
 Number of ?IDEF/?LDEF Device Control Tables : 1

Should the default system configuration parameters be used? (y,n) [y]: y

=====

Should time slicing be used ? (y,n) [y]: y

Number of Time Slice Units ( in MSEC ) (1..256) [50]: 50

=====

Should Connection/Server Management (IPCs/Mailboxes) be included ? (y,n) [n]: n

=====

Enter Pathname to Initial Process [:CLI.PR]: :CLI.PR

Default Initial Process Parameters are:

Maximum Number of Channels for Initial Process : 15  
 Maximum Number of Tasks for Initial Process : 3  
 Maximum Size of Memory (in pages) for Initial Process : 32



Maximum Number of Attached Segments for Initial Process : 0  
Maximum Number of Overlay Nodes for Initial Process : 2

Should the default initial process parameters be used? (y,n) [y]: y

=====

Other Eclipses

-----

12-kernel  
19-supervisor  
8-hyperspace

-----

39-system requirements  
28-cli

-----

67-starter system

Other Eclipses Sysgen Script

-----

MP/AOS SYSGEN -- Rev. 2.00            Sunday January 8, 1984            12:55:12 PM

The following CPU types are available:

- a) S130
- b) S140
- c) C150
- d) C330
- e) S250, C350
- f) S120
- g) S20
- h) S280
- i) DG/10SP
- j) DG/20, DG/30

Which CPU is this system for? (a,b,c,d,e,f,g,h,i,j) [a]: a

Clock frequency (10,60,100,1000) [100]: 100

Do you want to include Power Fail/Restart capability? (y,n) [n]: n

=====

Do you want to build a memory resident system? (y,n) [n]: n

=====

Is the system console a Dasher (TM) display? (y,n) [y]: n

Characters per line (40..132) [72]: 72

Keyboard characteristics [?cnas+?cech]: ?cnas+?cech

Display characteristics [?cst+?cnas+?cuco]: ?cst+?cnas

Keyboard device code (3..76) [10]: 10

The keyboard is named @TTI

The display is named @TTO

Do you have a 4010 controller(s)? (y,n) [n]: n

Do you have a 4241/4243 (ULM) controller? (y,n) [n]: n

Do you have an ALM controller? (y,n) [n]: n

=====

How many disk controllers are there? (1..12) [1]: 5

The following disk controllers are supported:

- a.) 10 mb cartridge(s) (6045/50) and/or 315 kb diskette(s) (6030)
- b.) 5 / 12.5 / 15 / 25 / 50 mb fixed disk and/or 1.2 mb diskette(s)  
(6097/8/9, 6225/27, 6234)
- c.) 20 mb cartridge(s) (6070)
- d.) 50 / 96 / 190 / 277 mb cartridge(s) (6060/61/67, 6122) and/or  
73 / 147 mb fixed disk (6160/61)
- e.) 354 mb fixed disk (6236)
- f.) 368 kb diskette (5750)

Choose the appropriate letter for controller # 1 (a,b,c,d,e,f) [a]: a

Enter the device code for this controller (in octal) (3..76) [33]: 33

Enter the number of cartridge disks on this controller (0..4) [1]: 1

Enter the number of diskette units on this controller (0..3) [1]: 0

Unit 0

The removable pack is named @DPD0

The fixed platter is named @DPD4

.....

- a.) 10 mb cartridge(s) (6045/50) and/or 315 kb diskette(s) (6030)
- b.) 5 / 12.5 / 15 / 25 / 50 mb fixed disk and/or 1.2 mb diskette(s)  
(6097/8/9, 6225/27, 6234)
- c.) 20 mb cartridge(s) (6070)
- d.) 50 / 96 / 190 / 277 mb cartridge(s) (6060/61/67, 6122) and/or  
73 / 147 mb fixed disk (6160/61)
- e.) 354 mb fixed disk (6236)
- f.) 368 kb diskette (5750)

Choose the appropriate letter for controller # 2 (a,b,c,d,e,f) [a]: b

Enter the device code for this controller (in octal) (3..76) [26]: 26

Enter the number of disks on this controller (1..4) [2]: 2

Unit 0 is named @DPH0

Unit 1 is named @DPH1

.....

- a.) 10 mb cartridge(s) (6045/50) and/or 315 kb diskette(s) (6030)
- b.) 5 / 12.5 / 15 / 25 / 50 mb fixed disk and/or 1.2 mb diskette(s)  
(6097/8/9, 6225/27, 6234)
- c.) 20 mb cartridge(s) (6070)
- d.) 50 / 96 / 190 / 277 mb cartridge(s) (6060/61/67, 6122) and/or  
73 / 147 mb fixed disk (6160/61)
- e.) 354 mb fixed disk (6236)
- f.) 368 kb diskette (5750)

Choose the appropriate letter for controller # 3 (a,b,c,d,e,f) [a]: c

Enter the device code for this controller (in octal) (3..76) [67]: 67

Enter the number of disks on this controller (1..4) [1]: 1

Unit 0

The removable pack is named @DPG0

The fixed platter is named @DPG4

.....

- a.) 10 mb cartridge(s) (6045/50) and/or 315 kb diskette(s) (6030)
- b.) 5 / 12.5 / 15 / 25 / 50 mb fixed disk and/or 1.2 mb diskette(s)  
(6097/8/9, 6225/27, 6234)
- c.) 20 mb cartridge(s) (6070)
- d.) 50 / 96 / 190 / 277 mb cartridge(s) (6060/61/67, 6122) and/or  
73 / 147 mb fixed disk (6160/61)
- e.) 354 mb fixed disk (6236)
- f.) 368 kb diskette (5750)

Choose the appropriate letter for controller # 4 (a,b,c,d,e,f) [a]: d

Do you wish to enable ECC error correction? (y,n) [y]: y

Enter the device code for this controller (in octal) (3..76) [27]: 27

Enter the number of disks on this controller (1..4) [1]: 1

Unit 0 is named @DPF0

.....

- a.) 10 mb cartridge(s) (6045/50) and/or 315 kb diskette(s) (6030)
- b.) 5 / 12.5 / 15 / 25 / 50 mb fixed disk and/or 1.2 mb diskette(s)  
(6097/8/9, 6225/27, 6234)
- c.) 20 mb cartridge(s) (6070)
- d.) 50 / 96 / 190 / 277 mb cartridge(s) (6060/61/67, 6122) and/or  
73 / 147 mb fixed disk (6160/61)
- e.) 354 mb fixed disk (6236)
- f.) 368 kb diskette (5750)

Choose the appropriate letter for controller # 5 (a,b,c,d,e,f) [a]: e

Enter the device code for this controller (in octal) (3..76) [24]: 24

Enter the number of disks on this controller (1..4) [1]: 1

Unit 0 is named @DPJ0

=====

Do you want to be able to dismount the master disk? (y,n) [n]: n

=====

How many Programmed I/O lineprinters do you have? (0..8) [0]: 0

=====

Do you wish to include a Memory Dump facility? (y,n) [n]: n

=====

Do you wish to Enable Error Logging? (y,n) [y]: y

- a) Log Errors to Console.
- b) Log Errors to a Disk File.
- c) Log Errors to Console and Disk File.

Which type of Error Logging is desired ? (a,b,c) [c]: c

Enter Name of Error Logger Console [@TTO]: @TTO

Enter Pathname to Error Logger File [:SYSLOG]: :SYSLOG

=====

Default System Configuration Parameters are:

Number of Processes : 1  
 Number of Concurrent System Calls : 1  
 Number of System Buffers : 4  
 Number of System Overlay Buffers : 2  
 Number of File Information Block Buffers : 4  
 Number of User's Task Control Blocks : 3  
 Number of User's Channels : 15  
 Number of User's Global Segment Descriptors : 0  
 Number of User's Attached Segment Descriptors : 0  
 Number of User's Segment Map Blocks : 0  
 Number of User's Overlay Node Descriptors : 2  
 Number of Concurrent Histogram Operations : 0  
 Number of Delimiter Tables : 1  
 Number of ?IDEF/?LDEF Device Control Tables : 1

Should the default system configuration parameters be used? (y,n) [y]: y

=====

Should time slicing be used ? (y,n) [n]: y

Number of Time Slice Units ( in MSEC ) (1..256) [50]: 50

=====

Should Connection/Server Management (IPCs/Mailboxes) be included ? (y,n) [n]: n

=====

Enter Pathname to Initial Process [:CLI.PR]: :CLI.PR

Default Initial Process Parameters are:

Maximum Number of Channels for Initial Process : 15  
 Maximum Number of Tasks for Initial Process : 3  
 Maximum Size of Memory (in pages) for Initial Process : 32  
 Maximum Number of Attached Segments for Initial Process : 0  
 Maximum Number of Overlay Nodes for Initial Process : 2

Should the default initial process parameters be used? (y,n) [y]: y

=====

-----  
11-kernel  
18-supervisor  
8-hyperspace  
-----  
37-system requirements  
28-cli  
-----  
65-starter system

DG/10-SP, DG/20, DG/30 Sysgen Script  
-----

MP/AOS SYSGEN -- Rev. 2.00            Friday January 27, 1984            5:24:52 PM

The following CPU types are available:

- a) S130
- b) S140
- c) C150
- d) C330
- e) S250, C350
- f) S120
- g) S20
- h) S280
- i) DG/10-SP
- j) DG/20, DG/30

Which CPU is this system for? (a,b,c,d,e,f,g,h,i,j) [j]: j  
Clock frequency (10,60,100,1000) [100]: 100

=====

Do you want to build a memory resident system? (y,n) [n]: n

=====

System console:

The keyboard is named @TTI  
The display is named @TTO

Do you have a 4207 controller(s)? (y,n) [n]: n

Do you have a ASLM ( 4336-S/4336A-S ) controller? (y,n) [n]: n

=====

How many disk controllers are there? (1..12) [2]: 2

The following disk controllers are supported:

- a.) 5 / 15 mb fixed disk (5650)
- b.) 368 kb diskette (5750)

Choose the appropriate letter for controller # 1 (a,b) [a]: a

Enter the device code for this controller (in octal) (3..76) [26]: 26  
Enter the number of disks on this controller (1..4) [1]: 1

Unit 0 is named @DPH0

.....

- a.) 5 / 15 mb fixed disk (5650)
- b.) 368 kb diskette (5750)

Choose the appropriate letter for controller # 2 (a,b) [b]: b

Enter the device code for this controller (in octal) (3..76) [20]: 20  
Enter the number of diskette units on this controller (1..2) [2]: 2

Unit 0 is named @DPH10  
Unit 1 is named @DPH11

=====

Do you want to be able to dismount the master disk? (y,n) [n]: n

=====

How many Programmed I/O lineprinters do you have? (0..8) [0]: 0

=====

Do you wish to include a Memory Dump to floppy facility? (y,n) [n]: n

=====

Do you wish to Enable Error Logging? (y,n) [y]: y

- a) Log Errors to Console.
- b) Log Errors to a Disk File.
- c) Log Errors to Console and Disk File.

Which type of Error Logging is desired ? (a,b,c) [c]: c

Enter Name of Error Logger Console [@TTO]: @TTO  
Enter Pathname to Error Logger File [ :SYSLOG]: :SYSLOG

=====

Default System Configuration Parameters are:

Number of Processes : 1  
Number of Concurrent System Calls : 1  
Number of System Buffers : 4  
Number of System Overlay Buffers : 2  
Number of File Information Block Buffers : 4  
Number of User's Task Control Blocks : 3  
Number of User's Channels : 15  
Number of User's Global Segment Descriptors : 0  
Number of User's Attached Segment Descriptors : 0  
Number of User's Segment Map Blocks : 0  
Number of User's Overlay Node Descriptors : 2  
Number of Concurrent Histogram Operations : 0

Number of Delimiter Tables : 1  
Number of ?IDEF/?LDEF Device Control Tables : 1

Should the default system configuration parameters be used? (y,n) [y]: y

=====

Should time slicing be used ? (y,n) [y]: y  
Number of Time Slice Units ( in MSEC ) (1..256) [50]: 50

=====

Should Connection/Server Management (IPCs/Mailboxes) be included ? (y,n) [n]: n

=====

Enter Pathname to Initial Process [:CLI.PR]: :CLI.PR

Default Initial Process Parameters are:

Maximum Number of Channels for Initial Process : 15  
Maximum Number of Tasks for Initial Process : 3  
Maximum Size of Memory (in pages) for Initial Process : 32  
Maximum Number of Attached Segments for Initial Process : 0  
Maximum Number of Overlay Nodes for Initial Process : 2

Should the default initial process parameters be used? (y,n) [y]: y

=====