

# Enhancements to Global System Manager (MS-DOS) and Global System Manager (Novell)

This bulletin is to announce a major repackaging of Global System Manager (MS-DOS) and Global System Manager (Novell). The changes to the System Manager (MS-DOS) nucleus are independent of the version of Global System Manager and apply to both System Manager V7.0 and System Manager V8.0. The variant number for this release is 4.0 – this variant number appears in the title of the +JWDOS library.

The repackaging includes the following features:

- Four new configurations (5620, 5621, 5622 and 5623) are now available. All these configurations are supplied with a Discrete Data Volume (aka Separated Subunit Domain) instead of five Integrated Data Volumes. The full list of V7.0/V8.0 System Manager (MS-DOS) configurations is now:

<b><i>Config</i></b>	<b><i>Diskette format</i></b>	<b><i>Lan?</i></b>	<b><i>DOS-FILE/SSD-FILE</i></b>
5600	5½"	No	DOS-FILE
5601	5½"	Yes	DOS-FILE
5602	3½" (B3B)	No	DOS-FILE
5603	3½" (B3B)	Yes	DOS-FILE
5620	5½"	No	SSD-FILE
5621	5½"	Yes	SSD-FILE
5622	3½" (O2A)	No	SSD-FILE
5623	3½" (O2A)	Yes	SSD-FILE

All configuration files have been amended to include the G1B and O2B high capacity, 250 files per directory diskette formats.

Configurations 5600 to 5603 are only available until 31st October 1993 and will be supported until 31st October 1996.

The BACNAT volume contains two new DOS files SSD.INI (to replace GSM.INI for CV's 5620-5623) and SSDBOOT.BAT (to replace GSMBOOT.BAT for CV's 5620-5623). After copying the contents of the BACNAT diskette, overwrite GSM.INI with SSD.INI.

- GSMLOAD.EXE has been improved to recognise the following optional DOS environment variables:

GLDIR	to specify the System Manager directory;
GLCONFIG	to specify the System Manager configuration file;
GLINI	to specify the System Manager initialisation file.

- GSMLOAD.EXE also includes the following extra functionality:
  - Saves and restores IRQ-8 to IRQ-15; this is necessary when Hyperport, HyperMX and TCL CC/B cards are configured at interrupt levels 10, 11, 12 or 15.
  - The System Manager Bootstrap Diagnostic Messages (enabled by renaming the configuration file such that its last character is a "D") are now written to a DOS "Diagnostic Log" file, called "DIAGLOG.TXT", so that the information can be printed;
  - O2A diskettes can be used as BACRES or SYSIPL;
  - A bug has been fixed which prevented the S option (switch diskette drive numbers) from being used in conjunction with an SSD bootstrap.
- ALLOCATE.EXE has been modified to optionally create a 64Kb 00SYSDOM.SVL file when allocating a discrete Data File directory (i.e to allow for configuration files that include the T259Z format). Earlier versions of ALLOCATE.EXE always created a 32Kb 00SYSDOM.SVL file.

Note that the new configurations 5620 to 5623 for System Manager (DOS) (see above) all include Discrete Data File format T259Z whereas the existing configurations 5610 and 5611 for System Manager (Novell) both include Discrete Data File format T151Z. Configurations 5600 to 5603 for System Manager (DOS), and 5606 and 5607 for System Manager (Novell) do not include Discrete Data Files as standard.

The size of the 00SYSDOM.SVL file created by ALLOCATE.EXE must match the volume format defined in the configuration file as follows:-

Volume Format	Size of 00SYSDOM.SVL
T151Z	32Kb
T224Z	32Kb
T259Z	64Kb

If the size of the 00SYSDOM.SVL file does not match the volume format defined in the configuration file then a "HARDWARE ERROR" will be reported for the SSD-FILE disk.

The new version of ALLOCATE.EXE displays the following prompt when an attempt is made to create a Discrete Data File:-

Did you update the configuration file to add the discrete data file?

Reply N to this prompt if you are creating a discrete data file for the purposes of installing System Manager. Reply Y to this prompt if you are adding a new discrete data file to an existing system.

If you are creating a discrete data file for the purposes of installing System Manager, ALLOCATE.EXE will display the following prompt:-

Is this a GSM (Novell) installation?

Reply Y to this prompt if the System Manager configuration code is 5610 or 5611 (a 32 Kb 00SYSDOM.SVL file will be created). Reply N to this prompt if the System Manager configuration code is 5620 – 5623 (a 64Kb 00SYSDOM.SVL file will be created). If the System Manager configuration code is neither 5610 to 5611, nor 5620 to 5623, ALLOCATE.EXE should be used to allocate an Integrated Data File.

If you are adding a new discrete data file to an existing system, ALLOCATE.EXE will display the following prompt:-

Did you use volume format T259Z?

Reply Y to this prompt if the corresponding SSD-FILE entry in the configuration file includes volume format T259Z (a 64Kb 00SYSDOM.SVL file will be created). Reply N to this prompt if

the corresponding SSD-FILE entry in the configuration file includes volume format T151Z or T224Z (a 32Kb 00SYS DOM.SVL file will be created).

- The command syntax in the GSM.INI file for the DOS.PRI controller has been expanded to allow the string following a DOS.PRI entry in the GSM.INI file to specify either a device, directory or filename, according to the following rules:-

String terminated by a ":" indicates a device. For example:

"LPT1:" or "PRN:"

String terminated by a "\" indicates a directory. For example:

"C:\GSM\SPPOOL\"

Otherwise the string is interpreted as a filename. For example:

"PRINT.TXT"

The DOS.PRI section below describes how the directory and filename options are utilised.

The default GSM.INI file distributed on BACNAT diskettes has been changed to alter the DOS.PRI entry to indicate that LPT1 is a device by appending a ":". **Note that when upgrading a system an existing GSM.INI file will probably be used, in which case it will be necessary to update the DOS.PRI entries if they specify devices.**

- Various hard disk compression drivers are available under DOS, e.g. Doublespace is supplied with MS-DOS V6.0. These can cause problems when used with System Manager because System Manager expects the size of the domain (in this case a DOS file) to remain fixed whilst it is loaded. This assumption may not be valid when a disk compression driver is in use. In fact the amount of disk space taken by the file alters as data is written to it, making it possible for the disk to be filled whilst System Manager still reports free space. The DOS-FILE controller has been modified to report an "INSUFFICIENT SPACE" error if this condition is reached.

The DOS-FILE controller has also been modified to be used with read-only files. This facility should only be used on Novell workstation IPL volumes (i.e. where the information will be used on a read-only basis). If this facility is used then the monitor must be PIP'd to load P.\$MON from the master computer's SYSRES unit. A read-only file can be created by using either the Novell FILER utility or the DOS ATTRIB command. For example, the following DOS command line will set the read-only attribute on the file GSMIPL.VOL:-

ATTRIB +R GSMIPL.VOL

- The SSD-FILE controller has also been modified to work correctly with disk compression drivers, as described in the section above.

The original SSD-FILE controller was limited to domains of less than 512Mb in size. The new SSD-FILE controller increases this limit to the System Manager limit of 2Gb, but it must be used with volume format T259Z in order to achieve this size. This format has been chosen as the default for the new SSD-only configurations. Note that the 32Kb track size specified by T259Z causes several V8.0 System Manager utilities to fail with a PGM CHECK 11. These problems are fixed in System Manager V8.0 by applying zaps BS8015, BS8016 and BS8017.

A bug has been fixed in the initialisation code where the total size of the disk (the \$U information) is calculated. This information was taken from the default disk only, hence if System Manager was loaded from drive C: and had an SSD on drive D: then the disk size reported by \$U would be that for drive C:.

- The V3.0 DOS.PRI controller included the ability to write to a device or a DOS file, provided the file existed in the DOS directory structure. The new V4.0 controller has been altered to create the file if it does not exist, and to append data if it does. Also, a directory path can be specified in GSM.INI (denoted by terminating the path string by a "\") which will be used by

the controller as a spooler directory. The directory path specified must exist. Each System Manager print file will generate a corresponding DOS file with a unique filename. The DOS filename will be of the form *xxxxxxxx.nnn*, where *xxxxxxxx* is the converted GSM print file name and *nnn* is an incrementing sequence number which ensures the DOS filename is unique. The GSM print filename is converted using the same method as the SSD controller, i.e. all non-alphanumeric characters are removed. For example, using PRI in \$F in partition 1 produces a GSM print file called D.\$F01, which will result in a DOS file called DF01.*nnn*. The sequence number is derived from the files residing in the spool directory when System Manager is loaded and starts at "001" if the directory is empty. The maximum number is "999" and once this limit is reached no more files will be put into the directory, which is reported as a "DIRECTORY FULL" error when attempting to print.

Note that use of the DOS.PRI controller on multi-user systems can seriously impair performance due to limitations in the MS-DOS device handler. We strongly recommend the use of the S.PRINT (for serial printers) or the PRINTER (for parallel printers) controllers in multi-user systems.

- A bug has been fixed with the automatic OPID/TERM handling on multi-user systems where fewer OPID and TERM entries were supplied in GSM.INI than screens defined in the configuration file. The last OPID and TERM field values were used for all remaining screens which did not have their own OPID and TERM values, and so an "ALREADY SIGNED ON" error message was reported for these screens.
- A bug has been fixed in the integral screen controller when it was used in polled keyboard mode. The bug caused the controller to load a random keyboard and screen translation table which resulted in a blank or corrupted screen display and no response from the keyboard.

Do not be concerned by the warning message:

\$57 INITIATION WARNING 1 – FILE +JWNKEY? NOT FOUND.

that occurs every time the starter system is loaded. This missing "+JWNKEY?" module is not required by the current version of the nucleus. This module is reserved for future expansion.

- The "System Manager clock" on System Manager (Windows) loses time whenever System Manager is running as a background process. The timer controller has been changed to use the real time clock to update the System Manager clock accordingly rather than relying on a regular "tick".

The controller's mode is selected by the following flag in the NUCLEUS SECTION of the configuration file:-

Use RTC for clock updates?

Key Y to this prompt to enable the new mode.

- Global System Manager (DOS) already supports a method to access additional memory, via the LIM controller, which supports expanded memory either on a real expanded memory board or via an expanded memory emulator, e.g. EMM386.SYS under DOS 4.0 or EMM386.EXE under DOS 5.0.

Expanded memory uses a 64Kb segment of the upper memory blocks (between 640Kb and 1Mb). This can be problematical for several reasons:-

1. Some computers do not have a spare 64Kb block, so expanded memory cannot be used;
2. Where the computer does have a spare 64Kb segment of upper memory, certain cards (e.g. Smartport, Arcnet) require the use of 64Kb blocks;
3. DOS 5.0 optionally makes use of the upper memory blocks by allowing device drivers, etc. to be loaded in this area, thus freeing conventional memory (i.e. below

640Kb). Hence on machines running DOS 5.0 it may be impossible to use expanded memory.

We are pleased to release an XMS memory controller which uses XMS version 2.0 calls to access extended memory directly.

DOS must be configured to provide the XMS service used by the System Manager XMS driver. This is achieved by loading a DOS device driver which will manage extended memory and conforms to the Lotus/Intel/Microsoft/AST extended memory specification (XMS) version 2.0. For example, the HIMEM.SYS driver supplied with DOS 4.0 and 5.0.

Note that Windows requires the HIMEM.SYS driver to be loaded to allow it to access extended memory, hence the XMS controller will work when running System Manager on Windows. The amount of extended memory allocated to System Manager is controlled by an entry in the GSMBOOT.PIF file, which is set to 0 in the PIF file supplied on the BACNAT diskette. Use the PIF editor to update GSMBOOT.PIF to set the XMS Memory KB Limit to a suitable value, bearing in mind the following constraints:

1. An application running under Windows is given access to all available memory in the machine, hence it is possible to grab all extended memory by specifying a KB Limit equal to the total amount of memory in the machine. However, this will prevent other applications running efficiently since Windows will have to do more swapping to disk.
2. System Manager uses extended memory for two purposes, disk caching and RAM disk. It is best to let Windows do its own disk caching via SMARTDRV.SYS, since this has benefits for all applications running under Windows rather than just System Manager. A RAM disk is useful in System Manager, mainly as a work unit, but only if it is really kept in memory. Windows will move slices of memory onto the disk when many applications are running, which makes the description "RAM disk" inaccurate. It is possible to fix an allocated portion of extended memory in real memory, using the Locked flag in the PIF file, but this affects the performance of other applications.

The System Manager driver is enabled by using the "Memory Customisation" option of =.56nn to update the configuration file, choosing the "XMS" controller. Use the configuration maintenance option in \$CUS to enable/disable disk caching and RAM disk.

- A bug was found in the diskette bootstrap part 1 code. This bootstrap should display a warning message that the machine must be booted into DOS before attempting to load System Manager; however, it simply re-booted the machine. The problem has been fixed.
- Two bugs have been fixed in the machine dependent SVC61:-
  - The 'get default directory' function did not work because the function parameters were not set up in the correct registers.
  - The file attribute byte for the create/truncate (3CH), find first match (4EH) and create new (5BH) operations was assumed to be Intel rather than Cobol format.

However, the main change to the SVC61 controller has been to support more DOS functions. The full list of supported operations is now:-

<i>Function</i>	<i>Description</i>
0EH	Select disk
19H	Get default disk drive
1BH	Get allocation table information for default drive
1CH	Get allocation table information for specific drive
2AH	Get system date
2BH	Set system date
2CH	Get system time
2DH	Set system time
30H	Get MS-DOS version number

36H	Get free disk space
39H	Create directory
3AH	Delete directory
3BH	Set default directory
3CH	Create or open and truncate file
3DH	Open file
3EH	Close file
3FH	Read from file
40H	Write to file
41H	Delete file
42H	Move file points
43H	Get or set file attributes
47H	Get default directory
4EH	Find first match
4FH	Find next match
56H	Rename file
57H	Get or set file date and time
5AH	Create uniquely named file
5BH	Create new file

In addition to the extra DOS functions supported by the new version of SVC61 the following changes have been applied:–

- Another function, 0, is supported which returns the version number of SVC61.
- In the pre-V4.0 SVC61 three of the functions expected the attribute byte, *dsATTR*, parameter to be set in Intel format, i.e. low-byte first, rather than Cobol format. These functions are:–

Create/open truncate file	3CH
Find first match	4EH
Create new file	5BH

V4.0 SVC61 converts this field so this parameter must now be set in Cobol format.

- Effects of SVC61 on other controllers:

Two functions, "Select disk" (function code 0E) and "Set default directory" (function code 3BH), may affect the operation of the SSD-FILE and DOS.PRI controllers since they can rely on DOS remaining in the GSM directory. This problem is easily solved by specifying full path names (including the drive letter) for both of these controllers in GSM.INI; e.g. instead of using the following SSD-FILE entry:

SSD-FILE 0 GSM200

which is relative to the GSM start directory, use the line;

SSD-FILE 0 C:\GSM\GSM200

which makes the controller immune to any drive or directory changes carried out by SVC61.

These functions will not affect the DOS.PRI controller if it is used to access a real printer device, e.g. LPT1.