BULLETIN NUMBER GT666, 12 APRIL 1994

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

Bug in Configurator

ENHANCEMENTS TO GSM

This bulletin is to announce a major repackage of Global System Manager (MS–DOS and Windows) and Global System Manager (Novell). The changes to the System Manager (MS–DOS, Windows and Novell) nucleus are independent of the version of System Manager and apply to both System Manager V7.0 and System Manager V8.0. The variant number for the new nucleus software is 4.1. The variant number for the new Novell NLM is 1.7.

The repackaging includes the following features:

- Variant 1.7 of the Global System Manager NLM, GSM.NLM, now operates under NetWare version 4.01. In addition, the variant 1.7 NLM recognises the ACTIVITY–POLL keyword in the NLMGSM.INI file. The entry:–

  ACTIVITY–POLL *nnnn*

  causes all open NetWare files (i.e. opened by GSM.NLM) to be closed after *nnnn* seconds of inactivity. For example:–

  ACTIVITY–POLL 10

  will result in all NetWare files opened by GSM.NLM being closed after 10 seconds of inactivity.

  The value of ACTIVITY–POLL can be between 10 and 3600 seconds.

  GSM.NLM can be run in the OS_PROTECTED domain in NetWare 4.01.

  The fully released variant 1.7 GSM.NLM supersedes variant 1.4. Note that variants 1.5 and 1.6 of GSM.NLM were never released.

- A new DOS batch file, GLOBAL.BAT, can be used to install or load Global System Manager (MS–DOS). For example:

  C:\GSM>GLOBAL — Load Global System Manager from SYSRES (equivalent to GSMBOOT.BAT);

  C:\GSM>GLOBAL /I — Install Global System Manager from BACRES (equivalent to GSMINST.BAT).

- GSM.INI, GSMBOOT.BAT, GLOBAL.BAT (see above) and GSM.PIF have all been modified to use a Discrete Data Volume (also known as Separated Subunit Domain) instead of an Integrated Data Volume. In addition, the default GSM.PIF file now specifies 400 Kb of memory (the previous version specified 350 Kb). The old (i.e. Integrated Data Volume) versions of GSM.INI and GSMBOOT.BAT have been renamed to VOL.INI and VOLBOOT.BAT respectively.

- All error messages displayed by GSMLOAD.EXE are now prefixed by a unique error code. Please quote the full error message in all Hotline logs.

- The BACNAT software includes a special console MS-DOS device driver, GSMCON.SYS, for use with DOS-SCR and SPX-Workstation controllers. It is similar to ANSI.SYS but supports PC Workstation escape sequences and key bindings allowing the use of standard PC Workstation TAPs. Unlike ANSI.SYS, GSMCON.SYS doesn't become the standard CON: when installed. Instead a new device, GLC:, must be added to MS-DOS by including a line of the form:-

  DEVICE=C:\GSM\GSMCON.SYS

  to the CONFIG.SYS file.

  To use the driver with the DOS-SCR controller redirect standard in/out for GSMLOAD to GLC. For example:-

  GSMLOAD GSM200 < GLC: > GLC:

  and similarly for SPX-Workstation (see below).

  GSMCON.SYS recognises the following command line switches:-

/R	Reset terminal on open. This should be used if GSMCON.SYS is being used by the DOS-SCR controller. The terminal starts in 80-column mode, the cursor is turned on, colour is set to white on black and the status-line is cleared.
/S	Suppress reset on close. This option is useful if a bootstrap error message is displayed (normally the screen would be cleared during a close).
/E	Enhanced keyboard. Specify this option if you want to use the F11 and F12 keys on an enhanced keyboard.
/W*nn*	Wide display mode. The hexadecimal byte *nn* must correspond to 132-column mode for the particular display adapter. Note that not all display adapters support a 132-column mode.
/N*nn*	Narrow display mode. If this is not specified, the driver assumes the current screen mode when it is loaded is the narrow display mode. Typical values are 03 for colour screens and 07 for monochrome screens.
/8	Specify an 8-bit keyboard. By default all data returned from the keyboard is 7-bit data for PC Workstation compatibility. This option only affects the F11 and F12 keys. For example, F11 will return 0#1F, 0#85, rather than 0#1F, 0#05, if this switch is enabled.

- The PC-Workstation Terminal Attribute Programs (TAPs) are installed by default so are available when the GLC: DOS device driver is used (see above).

- A new version of SPXWS.COM with support for other character devices, apart from CON:, is included on the BACNAT diskette. A new command line switch has been added:-

  /D *device*

  which allows a device other than the default CON: to be specified. The final ":" of the device name *device* is optional. For example, to use the GSM console driver, GLC:, (see above) use the following command line:-

  SPXWS *net node socket* /D GLC

  The performance of SPXWS is much improved when used with the GLC: console device.

- ALLOCATE.EXE has been improved to allow the size of a subvolume file (e.g. 01SYSRES.SVL) to be increased without resorting to $REORG. This option is selected by keying 3 at the ALLOCATE menu.
  You will be prompted for the discrete data file directory name (as when creating a discrete data file). Once a valid directory has been specified you will be prompted for a filename which must be of the form nn??????.SVL and corresponds with the unit you want to enlarge. If you do not know the particular filename you can scan through each file in the chosen directory by keying <CR>, then keying Y to select the relevant file. Note that the 00??????.SVL file cannot be enlarged.

  On selecting a valid file its current size will be displayed and you will be prompted for a new size (specify in units of Kb or Mb - the default is Mb) which must be no smaller than the current file size. The requested size will be rounded up to the next 16 Kb boundary to ensure that it will be recognised by the SSD controller when loading System Manager. This feature can be used to move a unit from a T151Z domain to a T259Z domain by "enlarging" the file to its current size. ALLOCATE.EXE will ensure that it will become a multiple of the T259Z track-size.

  Note that all sizes relate to the DOS file size and not the System Manager unit size, which is 11½ Kb less than the DOS file size.

  All options now return to the ALLOCATE menu.

- The DOS.PRI printer controller now recognises an entry of LPT: in the GSM.INI file. The work-around solution of removing the final ":" in a DOS printer name is no longer necessary.

- A new version of +JWNS61 has been released in preparation for integration with Btrieve. This version of SVC-61 relocates itself into high memory to take up less space in the nucleus segment.

- A serious bug in the SSD-FILE controller has been fixed. This problem causes random data corruption, normally resulting in a system crash, when the size of the nucleus approaches 64 Kb.

  Another serious bug in the SSD-FILE controller has been fixed. This bug prevented the controller from reporting a MISSING DEVICE error when attempting to access a DOS directory (e.g. C:\GSM\GSM200) that does not exist. Although the domain would appear in the $U listing any attempts to access the non-existent domain would result in a computer crash.

  The SSD-FILE controller now sets the DOS archive bit if the contents of any sub-volume files are changed. This allows the use of an MS-DOS based archival backup utility with System Manager sub-volume files. Note that the domain header file (i.e. 00*dddddd*.SVL (where *dddddd* is the name of the domain) and the file corresponding to the SYSRES volume (i.e. usually 01SYSRES.SVL)) are always updated whenever Global System Manager is loaded.

  Furthermore, the SSD-FILE controller now correctly checks that all DOS volume files are an exact multiple of the volume format track-size. If the size of a DOS volume file is not an exact multiple of the volume track size then the corresponding sub-unit will be removed. The sub-unit will not appear in the domain listing and an error "Z" will be reported when listing the domain.

  In addition, the "return free space" calculation rounds down the free space to a multiple of

the track–size.

- Resellers should be aware of a potential problem that was introduced with the release of the variant 4.0 DOS-FILE and BIOSFILE controllers. The original DOS-FILE and BIOSFILE controllers were hard-coded to use volume format P151Z (i.e. a track-size of 4 Kb). This limitation was removed in the variant 3.0 +JWCA02 and +JWCA03 allowing volume formats P224Z, P246Z and P259Z to be accessed but the variant 3.0 controllers still assumed a track size of 4 Kb. The code was finally corrected in the variant 4.0 controllers, i.e. the hard-coded track size of 4 Kb was replaced by the true (virtual) track-size. However, this change could cause existing P224Z, P246Z and P259Z formats to become inaccessible (with a WRONG VOLUME FORMAT error). The problem is very unlikely to occur in practice because large MS-DOS files will normally be allocated in terms of megabytes and hence the size will almost always be an exact multiple of the track-size (4 Kb for P151Z; 8 Kb for P224Z; 16 Kb for P246Z and 32 Kb for P259Z) so there will never be any partial tracks to cause the disk size discrepancies that are responsible for the WRONG VOLUME FORMAT errors.

- There has been some confusion over the numerous volume formats for use with the DOS-FILE and SSD-FILE controllers. The new volume formats have been added as disk capacities have increased. The following table describes the volume formats for use with the DOS-FILE controller:-

Format	Size Limit	Track Size
P151Z	256 Mb	4 Kb
P224Z	512 Mb	8 Kb
P246Z	1 Gb	16 Kb
P259Z	2 Gb	32 Kb

  Although the same formats can be used with the BIOSFILE controller, the use of this controller is not recommended as enhancements to MS-DOS (e.g. disk-caching and data compression) make the BIOSFILE interface obsolete.

- The following table describes the volume formats for use with the SSD-FILE controller:-

Format	Size Limit	Track Size
T151Z	512 Mb	8 Kb
T259Z	2 Gb	32 Kb

  Please note there is no relationship between P151Z and T151Z.

  As most resellers are aware (see Global Technical Bulletin GT626, 20 August 1993) there are problems with System Manager version 8.0 when used with disk-formats with 32 Kb tracks (e.g. T259Z, P259Z). These problems normally manifest as Program Check 11. The following zaps and repackages are relevant:-

Program	Zap/Repackage
$V	BS8015
$CUS	BS8018
$S	BS8018
$REORG	BS8018

  Note that the repackaging zap BS8018 effectively replaces tailoring zaps BS8010 and BS8011.

- A new integral screen controller, +JWCB01, has been released. This version expects the keyboard translation tables to be held in a separate file, +JWNKEY. The keyboard translation tables have been relocated into high memory to take up less space in the nucleus segment.

- The nucleus section of the Global System Manager configuration files includes a "System Manager flag". This flag must be set to 2 for Global System Manager (MS-DOS and Windows), 3 for Global System Manager (Novell non-NLM) and 4 for Global System Manager (Novell NLM). DO NOT CHANGE THE VALUE OF THIS FLAG OTHERWISE UNPREDICTABLE RESULTS WILL OCCUR.

- The Adaptec SCSI hard-disk and tape controllers are now supported by System Manager (MS-DOS, Windows and Novell). The variant 4.1 +JWNADA module works with the AHA-1540CF and AHA-1542CF cards (see bulletin GT650, 7 January 1994.) The new hard-disk controller includes a disk-partitioning mechanism that is enabled using the =.*NNNN* customisation program. The new disk-partitioning scheme allows a System Manager SCSI disk to be split into a number of partitions. This scheme is private to System Manager and has been designed for use with SCSI disks of capacity 2 Gb or larger, although it may be used with any size of SCSI disk. If an attempt is made to configure a non-partitioned disk of capacity 2 Gb (P259Z) or 1 Gb (P246Z), or greater, the Adaptec controller will return the size of the disk in blocks (i.e. 512 bytes) rather than bytes. This reduced size will be indicated by the $U report. This disk partitioning scheme does NOT allow a SCSI-disk, accessed via the Adaptec controller, to be split between System Manager and MS-DOS (or System Manager and Unix). This new SCSI-disk partitioning scheme within the ADAPTEC hard-disk controller is completely independent from the traditional System Manager (BOS) BIOS-disk partitioning mechanism.

  Use =.NNNN option 8 (Adaptec SCSI disk partitioning) to create the partition map. The actual partition used for each virtual hard-disk on a partitioned physical disk is selected by the "partition number" prompt in Global Configurator. The volume format must be P259Z. A partition number of 0 (i.e. the default) indicates that the disk is not partitioned.

- It is now possible to select those interrupt vectors that are initialised by the System Manager Central Interrupt Handler (CIH), +JWNINT. This option is expected to be useful when non-System Manager, interrupt-driven, peripherals are attached to the computer. Use Global Configurator to modify the "Interrupt mask flag" in the nucleus section of the configuration file:-

  Set bit-0 (0#01) to prevent the use of IRQ-2
  Set bit-1 (0#02) to prevent the use of IRQ-3
  Set bit-2 (0#04) to prevent the use of IRQ-4
  Set bit-3 (0#08) to prevent the use of IRQ-7
  Set bit-4 (0#10) to prevent the use of IRQ-10
  Set bit-5 (0#20) to prevent the use of IRQ-11
  Set bit-6 (0#40) to prevent the use of IRQ-12
  Set bit-7 (0#80) to prevent the use of IRQ-15

  For example, a flag value of 0#5A (i.e. 01011010 binary) will prevent the CIH from initialising the interrupt vectors for IRQ-3, IRQ-7, IRQ-10 and IRQ-12; a flag value of 0#FB will result in the CIH initialising only the interrupt vector for IRQ-4; a flag value of 0#FF will prevent the CIH from initialising any interrupt vectors.

- It is now possible to select the modem control line used for busy-line handling by the S.PRINT serial printer controller. The "extra attribute flag" in the S.PRINT section of Global Configurator specifies the busy-line:

Extra attribute flag	Busy-line
#00	DSR
#01	CTS
#02	DCD

- The TCL PCC/i and Superport cards are now supported by System Manager (MS-DOS, Windows and Novell) using the variant 4.1 nucleus variant.

  The following members of the "TCL intelligent serial i/o family" are now supported:-

TCL serial i/o subsystem	Console	Printer
TIS Hyperport	HYPER	HYPER
Hyper/MX	HYPERMX or TCLSYNC	HYPERMX or HYPERMXP
PCC/i	PCC/I or TCLASYNC	PCC/I
Superport	PCC/I or TCLASYNC	PCC/I

  The entries in the "Console" and "Printer" columns refer to options in Global Configurator. The new TCLSYNC and TCLASYNC console controllers will result in faster throughput (over the HYPERMX and PCC/I controllers, respectively) by enabling a special "block-mode" display

option.

- The most recent revisions of the Novell LAN Executive (+JWEF01), IPX LAN controller (+JWCF08), SPX LAN controller (+JWCF0B) and SPX Workstation console controller (+JWCB0A) are included in this repackage. The new SPX remote console controller explicitly closes all sockets when System Manager terminates preventing System Manager from crashing when reloaded on a workstation running NetWare V3.12 or later.

- The System Manager "core dump" module, +JWNC0R, is now distributed on all System Manager (MS-DOS, Windows and Novell) BACRES diskettes. DO NOT ATTEMPT TO ENABLE THIS OPTION UNLESS EXPLICITLY ADVISED TO BY THE SERVICE CENTRE.

- The additional nucleus libraries for configurations 5606, 5607, 5610 and 5611 have been rationalised. The following nucleus libraries are present on the System Manager (MS-DOS, Windows and Novell) configurations:-

Library	Description	562x		5606/7	5610/1
+.J0	Intel-8086 executives	Yes	Yes	Yes	
+.JW	IBM PC computer specific	Yes	Yes	Yes	
+.JWDOS	System Manager (MS-DOS)	Yes	Yes	Yes	
+.JWNOV	System Manager (Novell)	No	Yes	Yes	
+.JWNLM	System Manager (Novell NLM)	No	No	Yes	

  Note that the contents of the +.JWNV library, present on earlier versions of System Manager (Novell), have been moved to +.JWNOV and +.JWNLM.

- The latest revision of the Serial Port Driver, %.JWS03, is now distributed on all BACRES diskettes.

- Resellers should be aware of a feature of GSMLOAD.EXE when loading Global System Manager from a Discrete Data Volume (also known as Separated Subunit Domain). GSMLOAD.EXE will load System Manager from the first DOS subvolume file with a filename that matches the string "??SYSRES.SVL", where ?? can be any characters. This assumption may cause problems if a DOS copy of 01SYSRES.SVL is made as a precaution before making changes to the configuration file and the backup filename matches the string "??SYSRES.SVL". Although it is always extremely prudent to make a copy of 01SYSRES.SVL before making changes to the configuration file (just in case the modified configuration fails to bootstrap) we advise renaming the backup version of the DOS file as "??OLDRES.SVL". For example:-

  C:\GSM\GSM200>COPY 01SYSRES.SVL 10OLDRES.SVL

- **IMPORTANT NOTE**: The shared use of an Adaptec AHA-154x or AHA-164x SCSI host adapter card between System Manager and an MS-DOS device driver is not allowed. If a standard System Manager (MS-DOS) configuration file is amended to include the Adaptec controller, +JWNADA, then either System Manager or the Adaptec BIOS must be used to access the SCSI devices (i.e. hard-disks and tape drives) attached to the SCSI bus.

  This restriction is likely to affect those configurations that include a SCSI tape-drive accessed using $TAPE. The table overleaf describes the possible combinations when a SCSI tape-drive is added to an existing configuration:-

HARDWARE CONFIGURATION	*COMMENTS*
The SCSI tape drive is the only peripheral on the SCSI bus. Non-SCSI hard disk or a SCSI hard-disk on a separate host adapter card. Adaptec BIOS enabled.	The SCSI $TAPE controller can be used on both ISA and MCA bus configurations.
The SCSI tape drive is the only peripheral on the SCSI bus. Non-SCSI hard-disk or a SCSI hard-disk on a separate host adapter card. Adaptec BIOS disabled.	The SCSI $TAPE controller can be used on ISA bus configurations only. Note that the +JWNADA module cannot be used with the MCA AHA-1640x adapter card if the BIOS is disabled.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (BOS) ADAPTEC hard-disk controller in the configuration file (i.e. volume format P246Z or P259Z). Adaptec BIOS enabled.	This is the standard "Adaptec" configuration. The SCSI $TAPE controller can be used on both ISA and MCA bus configurations.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (BOS) ADAPTEC hard-disk controller in the configurations file (i.e. volume format P246Z or P259Z). Adaptec BIOS disabled.	This configuration cannot bootstrap from the SCSI disk (because the Adaptec BIOS is disabled) but may be useful if the SCSI disk is a 2nd disk. The SCSI $TAPE and hard-disk controllers can be used on ISA bus configurations only. Note that the +JWNADA module cannot be used with MCA AHA-1640x adapter card if the BIOS is disabled.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (BOS) DISK hard-disk controller in the configuration file (i.e. hard-disk accessed via the BIOS, volume format P88Z). Adaptec BIOS enabled.	The SCSI $TAPE controller can be used on both ISA and MCA bus configurations. The +JWNADA controller can share the Adaptec mailbox with the BIOS.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (BOS) DISK hard-disk controller in the configuration file (i.e. hard-disk accessed via the BIOS, volume format P88Z). Adaptec BIOS disabled.	This is not a sensible configuration.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (MS-DOS) DOS-FILE or SSD-FILE hard-disk controller in the configuration file (i.e. hard-disk accessed via MS-DOS). No ASPI.SYS DOS device driver in use. Adaptec BIOS enabled.	The SCSI $TAPE controller can be used on both ISA and MCA bus configurations. The +JWNADA controller can share the Adaptec mailbox with the BIOS.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (MS-DOS) DOS-FILE or SSD-FILE hard-disk controller in the configuration file (i.e. hard-disk accessed via MS-DOS). No ASPI.SYS DOS device driver in use. Adaptec BIOS disabled.	This is not a sensible configuration.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (MS-DOS) DOS-FILE or SSD-FILE hard-disk controller in the configuration file (i.e. hard-disk accessed via MS-DOS). ASPI.SYS DOS device driver in use. Adaptec BIOS enabled.	The SCSI $TAPE controller CANNOT be used. The +JWNADA controller CANNOT share the Adaptec mailbox with any of the ASPI.SYS DOS device drivers.
SCSI tape-drive and SCSI hard-disk on the same SCSI bus. System Manager (MS-DOS) DOS-FILE or SSD-FILE hard-disk controller in the configuration file (i.e. hard-disk accessed via MS-DOS).	The SCSI $TAPE controller CANNOT be used. The +JWNADA controller CANNOT share the Adaptec mailbox with any of the ASPI.SYS DOS device drivers.

HARDWARE CONFIGURATION	*COMMENTS*
ASPI.SYS DOS device driver in use. Adaptec BIOS disabled.	

BUG IN CONFIGURATOR

In addition, **resellers should also be aware of a very serious problem in Global Configurator** when the configuration file contains mixtures of format T259Z volumes (i.e the default Separated Subunit Domain volume format) and other volumes. The problem only occurs if all three of the following conditions are met:

- System Manager caching is enabled;
- The DIRECT ACCESS CONTROLLER section of the configuration file includes at least one T259Z volume format;
- The last volume format in the DIRECT ACCESS CONTROLLER section of the configuration file is not T259Z.

For example, the problem will occur if System Manager caching is enabled and a P151Z volume is added (at the end of the DIRECT ACCESS CONTROLLER section) to a standard configuration file. If all three of the above conditions are met, Global Configurator will produce a corrupt configuration file. When the configuration file is used subsequently to load System Manager unpredictable errors will occur. The normal symptoms are unexpected, and fatal, errors loading P.$MON. These errors invariably prevent System Manager from loading! If a configuration file is corrupted in this way, the CACHE BUFFER SIZE field in the NUCLEUS OPTIONS of the configuration file will contain 4096, 8192 or 16384 instead of the expected value of 32768 (the value in this field should contain the size of the largest track of all the volume formats defined in the configuration file). This problem will be fixed in version 8.1 of Global Configurator.