GSM (Windows) BACNAT Variants

This document describes the various repackages of the Global System Manager (Windows) BACNAT software in chronological order. The following repackages have been released:

The variant of a Global System Manager (Windows) BACNAT module can be determined from the About option of the Help menu on the main Global System Manager window.

BACNAT variants are normally independent of the revision of Global System Manager V8.1. Any exceptions to this rule are documented in the relevant section of this note.

In general, when a new variant of a BACNAT component is released the **variant number (*n.n*)** will be increased. Very rarely, in special circumstances, you may be using an "Internal Release" version of a BACNAT component. Internal Release BACNAT components are normally only used within Global Business Systems for internal testing but may occasionally be released externally for informal evaluation, beta-tests or during the course of a problem investigation. Internal Release BACNAT components are not supported and are never generated by our Production Department although they may be available on the BBS from time-to-time. Internal Release BACNAT components are always referred to by a **lower-case version letter** (e.g. V2.1m etc.).

GSM (Windows) BACNAT variant 2.2
The V2.2 BACNAT repackaging for Global System Manager (Windows) includes the following features:

- The Global Client GLOBAL.EXE module has been enhanced to include an RPC interface to the Speedbase Btrieve Gateway (SPEEDBAS.EXE). See Appendix D for a full description of the Speedbase Btrieve Gateway;

- The GLREGED.EXE Registry Editor utility has been enhanced to recognise the new sub-keys and ValueNames required by the Speedbase Btrieve Gateway. See sections D.4 and D.5 for a full description of the new Registry keys and ValueNames;

- The SETUP.EXE installation utility has been enhanced to allow the installation of a single Speedbase Btrieve Gateway and to establish the RPC connections between a Global Client and one, or more, Speedbase Btrieve Gateways. See sections D.4 and D.5 for a full description of the Speedbase Btrieve Gateway installation procedure;

- A new console controller, NETWORK, has been implemented to allow between 1 and 99 "thin clients" to be connected via a TCP/IP telnet protocol to a Global Client. The "thin client" terminal emulator must be the Global Windows Workstation (GUI) operating in "TCP/IP external host" mode. A "thin client" configuration will provide a considerable performance improvement over the traditional LAN "fat-client" configuration on low-bandwidth wide-area networks. A "thin-client" configuration may also outperform a "fat-client" configuration on small local area networks.

    The terms "fat client" and "thin client" are best described by reference to a simple network consisting of a single "server" and one, or more, "workstations". In the "fat client" paradigm the Global Server process (i.e. GLSERVER.EXE) runs on the server; a separate "single-user" Global Client process (i.e. GLOBAL.EXE) runs on each of the workstations (the Global Clients are termed "single-user" because each configuration file includes a single GUI console controller). All processing is performed **locally** on each workstation. All access to shared files involves a **network** RPC request from the Global Client to the Global Server.

    In the "thin client" paradigm both the Global Server (i.e. GLSERVER.EXE) and a "multi-user" Global Client (i.e GLOBAL.EXE) run on the server (the Global Client is termed "multi-user" because one, or more, NETWORK console controllers (see below) augment the GUI console controller). Each workstation runs the Global Windows Workstation (GUI) to provide a network terminal emulator connecting to a TCP/IP socket created by the NETWORK console controller. All processing is performed **centrally** on the server. All access to shared files involves a **local** RPC request from the Global Client to the Global Server.

    Any combination of "fat client" and "thin client" is possible. On a complex network configuration some workstations run the Global Client (i.e. GLOBAL.EXE) in "fat client" mode while other workstations run the Global Windows Workstation (i.e. GSMWIN.EXE) in "thin client" mode. Furthermore, although a standard "thin client" configuration will include a GUI console in addition to one, or more, NETWORK consoles, the GUI console is not mandatory and can be removed thus allowing the GLOBAL.EXE process to effectively run as a "background terminal server". Note that if the GUI console controller is removed from the Global Client configuration file an empty Global window will still appear (change the properties of the Program Item/Shortcut to automatically run minimised).

Disk access in a "thin client" configuration can be improved by using the local RPC protocol (i.e. ncalrpc) instead of a network RPC protocol (e.g. ncacn_ip_tcp). This will maximise the data transfer rate between the Global Client and the Global Server running on the server computer. However, this option will prevent the Global Server from being accessed by any "fat clients" running on other computers on the network.

Disk access in a "thin client" configuration can be further improved by configuring a "local DDF" on the Global Client. Direct disk access from the Global Client is always faster than the RPC interface between a Global Client and Global Server. However, this option will also prevent the central data from being accessed by any "fat clients" running on other computers on the network (i.e. the Global Client running on the server cannot provide the server functionality to other Global Clients on the network).

To add a "thin client" console to an existing Global Client configuration use CFUPDATE to add a NETWORK controller in the USER DISPLAY ATTRIBUTES section of the Global Client configuration file (see section 8.3 of the V8.1 Global Operating Manual (Windows)). The TYPE AHEAD BUFFER LENGTH, DISPLAY BUFFER LENGTH, FUNCTION KEY BUFFER LENGTH, SCREEN IMAGE WIDTH, SCREEN IMAGE DEPTH, NUMBER OF STORED ATTR' BYTES, NUMBER OF VIRTUAL PARTITIONS, CHARACTER TRANSLATION ENABLED and CONSOLE EXECUTIVE FLAG BYTE are all described in section 2.4 of the V8.1 Global Configurator Manual. The "Screen Number" must match the following numeric sub-key in the Registry:

$GLMACH\Client\Screens\Network*nn*

where *nn* is a double-digit network console number between 01 and 99 (note that leading zeroes are mandatory for console numbers between 1 and 9).

The parameters specified by the following ValueNames under the:

$GLMACH\Client\Screens\Network

sub-key of the Registry affect all NETWORK consoles:

ReceivePollDivisor	This setting is fully described in section 8.3.2.2.1 of the V8.1 Global Operating Manual (Windows);
TransmitPollDivisor	This setting is fully described in section 8.3.2.2.1 of the V8.1 Global Operating Manual (Windows).

The parameters specified by the following ValueNames under the:

$GLMACH\Client\Screens\Network*nn*

sub-key of the Registry only affect a single NETWORK console:

Port

This parameter allows the TCP/IP port number to be changed from the default of 23. The Global Windows Workstation (GUI) currently only attempts to open a TCP/IP socket on port number 23. Consequently, this option should not be used and is reserved for future use;

OperatorID

This 4 character string specifies the Global System Manager operator-id for the user accessing the network screen;

TerminalType

This 4 character string specifies the Global System Manager Terminal Type for the network screen (e.g. 711);

DisplayBufferSize

This value allows the size of the internal Display Buffer used by the NETWORK console controller to be altered from the default value of 512. Increasing the size of the display buffer **may** improve the "transmit character" performance of the NETWORK console controller under some circumstances.

- All Global System Manager (Windows) configuration files have been simplified to include just a single WINPRINT printer controller at unit address 500 (the configuration files released with the V2.1 BACNAT software contained a DOSPRINT controller (unit 500) and a WINPRINT controller (unit 501)). The SETUP.EXE installation utility has been modified to install a single WINPRINT sub-key in the Registry;

- The Global Client (GLOBAL.EXE) loader now closes the GL-IPL.DLV file once the start-up information has been read. This change allows multiple Global Clients to share the same GL-IPL.DLV file;

- The Global Client (GLOBAL.EXE) recognises the following new ValueNames under the:

    $GLMACH\Client

   sub-key of the Registry:

   MaximumMemory

This value allows the amount of dynamic memory (in Mb's) allocated by the Global Client to be changed from the default value of 4Mb. This option is only required if very large multi-user configurations require a Global $$SWAP*xx* Swap File;

   DisableHibernation

Enabling this option prevents the GLOBAL.EXE process from relinquishing control to Windows NT (and will result in GLOBAL.EXE "hogging" all the CPU resources). This option should only be required in exceptional conditions

when the Global Client is the only process running on the Windows NT computer.

- The bug that causes the Global Client to crash when <SYSREQ> . is key has been fixed. The <SYSREQ> . key combination is now ignored;

- The BACNAT variant (i.e. V2.2) is now displayed correctly by $S;

- The obsolete $.711 Terminal Attribute Program (TAP) that was distributed with the initial release of Global System Manager (Windows) has been replaced by the version which supports the 132-wide option;

- The Registry key handling in both the Global Client and the Global Server inverting the meaning of the "True" and "False" strings. Both processes now accurately honour the various options listed in section 7.2.1 of the V8.1 Global Operating Manual (Windows);

- A problem that caused a severe degradation in the performance of the Global Client when using terminal type 712 has been fixed by enabling the following new ValueName under the:

    $GLMACH\Client\Screens\GUI

  sub-key of the Registry:

    EnableStartAccept   Enabling this option will reduce the performance overhead that may result if the default terminal type (i.e. 711) is changed to 712. If this option is enabled the screen is not updated for each character that is displayed. Instead, the screen is only updated when a Start Accept operation is initiated. This reduction in the frequency of screen refreshes can often result in improved overall performance.

- The "This will end your Global session prematurely..." Dialogue Box that appears when an attempt is made to close the Global Client without running $BYE when using terminal type 711 now appears when terminal type 712 is used;

- A problem that caused the "pound symbol" to appear as a graphics box character when "pound-to-hash" translation was enabled (e.g. when terminal type 714 was being used) has been fixed;

- The server node-id (e.g. "A", "B" etc.) is displayed at the start of the server name when this text appears on the taskbar. This is to prevent the crucial server node-id information from disappearing when the Global server text is truncated on a crowded taskbar;

- The Global Client "GUI front-end" now explicitly loads the required text fonts from the DOSAPP.FON file. This modification fixes various screen and character corruption

programs that were observed when a WideModeFont (or non-default NarrowModeFont) setting was used;

- A problem in the serial console controller that was responsible for random hangs, particularly when the serial interface involved copious XON/XOFF flow-control, has been fixed;

- It is now possible to include more than 9 serial consoles in a Global Client configuration. **THIS CHANGE HAS RESULTED IN AN INCOMPATIBLE CHANGE TO THE GLOBAL SECTION OF THE REGISTRY**: All single digit sub-keys below the $GLMACH\Client\Screens\Serial key must be prefixed with a leading zero. Although the SERIAL console controller will recognise single-digit sub-keys with or without a leading zero, the V2.2 GLREGED.EXE utility will not recognise single digit sub-keys without a leading zero (any such existing sub-keys can only be amended or deleted using REGEDIT.EXE or REGEDT32.EXE);

- A problem in the RPC interface, that could result in misleading error messages when attempting to access non-existent servers, has been fixed. Furthermore, an API error will be reported for all executive operations (including the Reset operation) if the DiagnosticDisplays option (see section 8.9.3 of the V8.1 Global Operating Manual (Windows)) is enabled. In addition, the problem in the V2.1i internal release BACNAT that resulted in an "Out of Resources" error when $BYE is run, has been fixed;

- Both the DDF and IDF simulated volume controllers open the appropriate Windows files in "shared mode" thus allowing Global data files to be shared with other Windows applications (e.g. ODBC drivers);

- A problem in the WINPRINT printer handling, that caused the "Print Dialogue Box" to appear spuriously when the Windows printer name is defined in the Registry, has been fixed. A further problem that results in an API error (from the CGetMemory function) if no local Windows printers are available, has also been fixed. Furthermore, the problem that results in irrecoverable NOT READY errors, after a genuine NOT READY error, has been fixed;

- The Global Client (GLOBAL.EXE) now recognises the following new ValueNames under the:

    $GLMACH\Client\Printers\WinPrint\5*nn*

 sub-key of the Registry:

Timeout	This value allows a "close printer timeout" to be specified in seconds. Any value between 1 and 60 is allowed (a value of 0 implies no timeout). When the timeout period elapses the Windows printer is closed to allow Stationery Alignment patterns to be printed in real-time;

DisableValidation   Enabling this option causes the WinPrint controller to ignore the validation of the printer name (see section 8.5.2.2 of the V8.1 Global Operating Manual (Windows)). This option is expected to be of use if access to a Windows printer that exists in another Windows domain or workgroup is required. This option will also be useful if the computer to which the printer is attached is not running Windows when the Global client is initiated.

Note that a network printer must be addressed using its "share name" (e.g. "\\tismdtpc\hp") under Windows NT; or its locally defined printer name (e.g. "\\tismdtpc\hp printer") under Windows 95;

- A problem in the DOSPRINT printer controller that caused the file-mode flags specified by the "CreateNew" and "LFToLFCR" value-names under the:

    $GLMACH\Client\Printers\DOSPrint\5*nn*

 sub-key of the Registry to be ignored, has been fixed;

- The Global Client has been enhanced to allow Global System Manager (Windows) to be installed from a post-box area on a hard-disk. This change is required for future enhancements that will allow Global System Manager to be installed from media other than diskettes;

- The Global Client (GLOBAL.EXE) now recognises the following new ValueNames under the:

    $GLMACH\Client\Screens\Serial*nn*

 sub-key of the Registry:

ImmediateInput   Enabling this option **may** improve the "receive character" performance of the SERIAL console controller under some circumstances;

DisplayBufferSize   This value allows the size of the internal Display Buffer used by the SERIAL console controller to be altered from the default value of 512. Increasing the size of the display buffer **may** improve the "transmit character" performance of the SERIAL console controller under some circumstances.

- The Global Client process has been enhanced to inform all the relevant Global Servers that a connection has been broken by an operator closing the client without running

$BYE. This closure is normally performed by clicking on the "close window box" and selecting the "OK" button in the Dialogue Box that appears. The effect of this change is that the "Global Client is already running" Dialogue Box should only appear when a genuine operator error has occurred (i.e. when an attempt is made to load more than one copy of the Global Client on a particular computer) and should not occur spuriously after a Global Client has been closed without running $BYE. However, this change does not affect the status of the Global files that are flagged as "open by the Global Client" on a Global Server;

- The V8.1 Global Operating Manual (Windows) contains a number of serious errors. On page 2-11, the table of Protocols and Endpoints should be as follows (the changes to the published manual are embolden):

Protocol	Endpoint
LOC or ncalrpc	**Free-format (but must not be blank)**
TCP or ncacn_ip_tcp	1024 to 5000
SPX or ncacn_spx	32768 to 65535
ncacn_np	\pipe\pipe_name
ncadg_ip_udp	1024 to 5000
ncacn_nb_tcp	**33** to 255
ncacn_nb_nb	**33** to 255
ncadg_ipx	32768 to 65535

On page 2-16, the Address Format for the ncacn_nb_tcp and ncacn_nb_nb protocols should be the "server name" and not <blank>.

GSM (Windows) BACNAT variant 2.3

The V2.3 BACNAT repackaging for Global System Manager (Windows) includes the following features:

- Both the Global Client, GLOBAL.EXE, and the Global Server, GLSERVER.EXE, validate the "type" of the Values defined in the Global section of the Registry. This extra checking is required to prevent the unpredictable results that may occur if values of an incorrect type are added to the Global section of the Registry when using the standard Windows Registry editor. This inconsistency can never occur if GLREGED.EXE is used to maintain the Global section of the Registry;

- The problem that caused the Global Client to hang if the "DisplayBufferSize" option is defined in the Registry has been fixed;

- SVC-61 has been enhanced to allow direct calls to an RPC Server. Details of this interface are beyond the scope of this document;

- The problem that allowed the Global Client to be closed, without a Confirmation Box appearing, has been fixed. This problem only occurs when $.712 is used in the same

Global Client session as $.711 (i.e. sign-on using terminal type 711; run $E; sign-on using terminal type 712; close the Global Client);

- The problem that caused a "display latency" when using the Global Client on Windows NT Server has been addressed in BACNAT V2.3. However, an improved solution has been implemented in BACNAT V2.5 (see section 5.5, below);

- The problem that caused the "EnableStartAccept" option to be ignored has been fixed;

- The problem that caused the Global Client to crash if the Master Server is closed has been fixed. Note that this problem only occurs if Status Line Polling is enabled;

- The V2.3 BACNAT software includes the V2.1D GUI module. This version of the GUI module (which is a pre-release version of GUI V2.2) is incompatible with the released Global Windows Workstation V2.1A.

GSM (Windows) BACNAT variant 2.4

The V2.4 BACNAT repackaging for Global System Manager (Windows) includes the following features:

- The problem that caused a severe performance degradation if "thin client" NETWORK consoles (see section 5.2, above) are restarted (i.e. using the $STATUS RES command) or cancelled (i.e using the $STATUS CAN command) has been fixed;

- The V2.4 BACNAT software includes the V2.1D GUI module. This version of the GUI module (which is a pre-release version of GUI V2.2) is incompatible with the released Global Windows Workstation V2.1A.

GSM (Windows) BACNAT variant 2.5

The V2.5 BACNAT repackaging for Global System Manager (Windows) includes the following features:

- The Global Client "display latency" problem has been fully resolved with BACNAT V2.5;

- The V2.5 BACNAT software includes the V2.1E GUI module. This version of the GUI module is, by default, compatible with the released Global Windows Workstation V2.1A. However, the "GUI V2.2" mode can be enabled by setting the following ValueName under the:

    $GLMACH\Client\Screens\GUI\Miscellaneous

 sub-key of the Registry:

VGACompatibility   Set this parameter to "Off" to enable the GUI V2.2 features of the V2.5/V2.1E BACNAT software. This feature is provided for evaluation purposes only.

- The Console Executive has been enhanced to support 2 new escape sequences that allow the "GUI mode" to disabled/re-enabled under program control. This feature may be used by future versions of the Menu Handler. The Console Executive also supports a new operation that allows Character Translation to be disabled/re-enabled (i.e. the Character Translation that is determined by the TRANSLATIONS section of the TAP and/or the contents of the $$TR*tttt* file, created and maintained by <SYSREQ> B).

  The changes to the Console Executive that were added to support the Global System Manager language translation mechanism (see section 3.4) have been rescinded. This has been necessary to prevent problems with Speedbase applications when text-strings containing the tilde character (0x7e) are displayed and accepted. Note that the Global System Manager language translation mechanism, which has not been fully implemented, should not be confused with the Console Executive Character Translation facility described in the previous paragraph.

  The bug that caused characters to be lost occasionally when swapping partitions on a "GUI screen" has been fixed.

- SVC-18 has been enhanced to support the extended interface required for the version of the Open TFAM Access Method that supports a block size larger than 256 bytes (see section 2.6).

GSM (Windows) BACNAT variant 2.6

The V2.6 BACNAT repackaging for Global System Manager (Windows) includes the following features:

- Disk partitions larger than 4Gb are supported (this change was first implemented in BACNAT variant V2.5A). **Important note:** Although Windows filing system partitions larger than 4Gb are supported, the maximum size of a simulated domain (e.g. A00) remains at 2Gb. However, multiple Global simulated domains can be configured on a particular Windows partition to allow more than 2Gb to be accessed. For example, domains B00, C00, D00 and E00 can be configured on an 8Gb filing system (via 4 Global Servers "B", "C", "D" and "E") to provide Global applications up to 8Gb of data. This technique can be extended to provide up to 52Gb of Global data, with other simple customisations possible to increase this capacity even further;

- The Console Executive and the various console controllers have been enhanced to recognise the following new option in the registry (this change was first implemented in BACNAT variant V2.5B):

      ..\Screens\Network*nn*\GlobalWindowsWorkstation
      ..\Screens\Serial*nn*\GlobalWindowsWorkstation

..\Screens\GUI\GlobalWindowsWorkstation

The GlobalWindowsWorkstation registry option is reserved for future use;

- The Printer Executive has been enhanced to allow "pooled printing". A pool of printers can be specified by the bottom 4 bits of the printer DEVICE CHARACTERISTICS BYTE:

Bit	Meaning
3	0 = Normal printer; 1 = Pooled printer
2,1,0	Pool number (0 to 7)

    For example:

Printer	Value	Description
500	#00	Normal printer
501	#08	Pooled printer, pool-0
502	#08	Pooled printer, pool-0
503	#09	Pooled printer, pool-1
504	#09	Pooled printer, pool-1
505	#0F	Pooled printer, pool-7
506	#0F	Pooled printer, pool-7

    If any printer in a particular pool is IN USE, printing will automatically switched to another printer in the same pool. The Pooled Printer option allows simultaneous printing, with a single $PR assignment, without the need to run the Global spooler, $SP;

- The Global Client executable file, GLOBAL.EXE, is developed as Windows "Window" application, which prohibits the option to operate in "full screen" mode. An alternative Global Client executable file, GLCONS.EXE, has been developed as a "Console" application to allow Global applications to be run in "full screen" mode **with some restrictions** (see below). GLCONS.EXE is a "slot-in" replacement for GLOBAL.EXE, supporting all the standard options (e.g. Windows printing, thin-client option etc.) - only the front-end is different.

    Although, GLCONS.EXE, is copied from the distribution media (i.e. diskette or CD) to the Global run-time directory by the setup process, a shortcut is NOT established for this option. Replacing GLOBAL.EXE by GLCONS.EXE must be done "by hand" after installation. No configuration file or registry changes are required. All the registry options in the following key, recognised by GLOBAL.EXE, are ignored by GLCONS.EXE:

    ..\Screens\GUI

The following new registry setting is recognised by GLCONS.EXE and allows the size of the cursor to specified (as a percentage of a full size cursor, with a default of 20):

..\Screens\GUI\CursorSize

The following special TAP's must be used with the GLCONS.EXE option:

$.730   80*24; 132*24 for GLCONS.EXE on Windows NT
$.731   79*24 only for GLCONS.EXE on Windows 95

Important Note-1: 132-wide operation is only available with Windows NT.

Important Note-2: Changing the Terminal Type to 730 or 731 (i.e. from 711) may involve modifying the ..\Client\TerminalType value in the registry.

The window displayed by GLCONS.EXE can be toggled between "windowed" and "full screen" mode by keying <ALT><ENTER>. The properties of the window (e.g. font size etc.) can be modified "on the fly" using normal Windows techniques. The default operating mode (i.e. "windowed" or "full screen") can be customised into the Windows NT shortcut.

There are a number of important differences between GLCONS.EXE on Windows 95 and GLCONS.EXE on Windows NT. The various options are summarised below:

Option	Win-95	Win-NT
80th column position available	No	Yes
full screen mode supported	Yes	Yes
full screen at start-up possible	No	Yes
132 wide window supported	No	Yes
132 wide full screen supported	No	No

- The V2.6 GLOBAL.EXE includes the V2.2 Global Windows Workstation module (revision V2.2g). Please refer to the V2.2 Global Windows Workstation Notes for further details;

- The algorithm used to hibernate GLOBAL.EXE when all Global users are inactive has been improved. Global System Manager will only utilise CPU resource when Global users are active. The small (5 second) latency between the last active Global user becoming inactive and CPU usage reducing to a minimal value, typically 1-2%, has been removed;

- The NETWORK controller has been enhanced to return the current status of the TCP/IP connection. The "line connection" status is displayed by the $STATUS command:

LINE DOWN   the console channel is waiting for a thin-client to connect;

SCREEN I/O ERROR   an unexpected network error has occurred.

Thus, $STATUS can be used to determine the status of the NETWORK consoles. In particular, the LINE DOWN condition can be used to determine the state of the connection:

Operator-id?	Line status	Description
No	LINE DOWN	Waiting for a "thin client" to make a connection i.e. the channel is available for a thin client connection either at initial start-up or after a user has run $E and closed the GUI;
No	NOT SIGNED ON	$E or $STATUS/RES has been used to restart the user but the GUI has not been closed;
Yes	ACTIVE etc.	Normal operation - a thin client is connected to Global System Manager;
Yes	LINE DOWN	An operator has closed down the Global Windows Workstation **without** running $E. This connection will be unusable until $STATUS/RES is used to restart the user.

The NETWORK controller will display one of the following error messages when a thin client connection cannot be made:

No more screens available on port *nn*

This message indicates that all NETWORK entries in the configuration are connected.

Restart a user on port *nn* before continuing

This message indicates that some of the NETWORK connections are unusable because one, or more, operators have closed down the Global Windows Workstation without running $E. This message will occur on "pure" NETWORK configurations;

The last user to use this connection did not sign-off correctly.
This user must be restarted before the connection can be established.
Use $STATUS to restart the user on console number *nn*, break this
connection and retry the connection again.

This message indicates that some of the NETWORK connections are unusable because one, or more, operators have closed down the Global Windows Workstation without running $E. This message will occur on NETWORK configurations that include at least one other type of console (e.g. GUI or SERIAL).

Important note: The "console number" in the last message refers to a simple console index, counting from 1. It does NOT refer to USER NUMBER displayed by $STATUS.

- If the Endpoint value for ncacn_ip_tcp Client-Server connections is removed from the registry the recommended values (e.g. 3000 for server "A", 3001 for server "B" etc.) will be used automatically by both the Global Client and the Global Server. This option is recognised by GLOBAL.EXE, GLSERVER.EXE and GLSSTART.EXE;

- The following registry option:

      ..\Client\NodeID

  can be overridden by the value associated with the /EN command line argument. This feature allows the Symmetric Multiple Client (SMC) option to be configured. Please refer to the Global System Manager V8.1 (Windows) Global Configuration Notes for further details;

- A problem in SVC 70 that can result in a General Protection Error if the supplied pathname is invalid has been fixed;

- A problem that prevented the use of the letter "V" for (unofficial and unsupported) End-User System Request has been fixed;

- GLOBAL.EXE has been enhanced to accept pathnames quoted in matching double-quotes. This allows pathnames that include space characters to be used. Note that some of the other Global System Manager (Windows) utilities (e.g. SETUP.EXE and GLDFMAIN.EXE) have NOT been upgraded to supported quoted filenames;

- GLOBAL.EXE uses the value associated with the /W command line argument as a delay (in seconds) before closing the main window after $BYE or an unexpected termination. For example, to delay for 10 seconds, to allow a $57 INITIATION ERROR to be read, include /W=10 in the GLOBAL.EXE command line;

- The name of the configuration file can be overridden using the /EC command line argument. THIS OPTION SHOULD NOT BE USED AND IS RESERVED FOR FUTURE EXPANSION;

- If the NetworkAddress value for ncacn_ip_tcp Client-Server connections is removed from the registry the /IP command line argument can be used to specify the IP address of one, or more, Global Servers;

- Further enhancements have been made to the NETWORK controller to improve the performance of thin-client configurations;

- A new option in the DOSPRINT controller, for use when creating files on a "spooled directory", is now available. The new option which is enabled by the following option in the registry causes the filename suffix to automatically wrap from .999 to .000 (instead of returning a DIRECTORY FULL error message):

    ..\Printers\DOSPrint\5*nn*\SuffixWrap

- A new option in the DOSPRINT controller, for use with the Pooled Printer option (see above) when creating files in a "spooled directory", is now available. The new option which is enabled by the following option in the registry changes the algorithm used to form the filename of the file in the "spooled directory":

    ..\Printers\DOSPrint\5*nn*\PooledPrinter

  When this option is enabled, the name of the file is:

    xxxxxxpp.nnn

  where *xxxxxx* are the first six characters of the Global filename; *pp* is the printer unit minus 500 (e.g. 00 for printer 500; 01 for printer 501, etc.); *nnn* is the auto-incrementing file suffix (i.e. 000, 001, to 999).

- The deliberate restriction that prevented a Global Client being configured with a node-id between "A" and "Z" has been removed. The GLOBAL.EXE /X command line argument allows the Global Client NodeID in the registry to be set to any value between 1 and 26 (corresponding to "A" to "Z"). **Important note:** Although this option allows a Global Client to be allocated a notional file server node-id (e.g. "A") the Global Client cannot be accessed as a file server by other Global Clients on a network;

- The NETWORK controller has been enhanced to include some of the functionality of a general-purpose telnet host. The following new registry options are available:

    ..\Screens\Network*nn*\IgnoreIACSequences
    ..\Screens\Network*nn*\LogIACSequences

  Important note: These changes have been implemented for internal use only when connecting GSM(Windows) to a 3rd party telnet emulator. The "thin client" NETWORK controller is only supported externally with the 16-bit Global Windows Workstation (i.e. GSMWIN.EXE) operating in "TCP/IP external host" mode or the 32-bit Global Windows Workstation (i.e. GSMWIN32.EXE) operating in "telnet" mode;

- The following reserved option has been added to the registry:

..\Data\RAMDisk\RAMDiskSizeKb

GSM (Windows) BACNAT variant 2.6 (revised August-1998)

During August 1998 the V2.6 BACNAT software for Global System Manager (Windows) was revised to include updated versions of the following components:

File	*File released with original V2.6*	*File released with updated V2.6*
GLCONS.EXE	5-May-1998; filesize 344,064 bytes	18-Aug-1998; filesize 340,992 bytes
SPEEDBAS.EXE	Version V1.31	Version V1.56

The revised GLCONS.EXE includes the following features:

- GLCONS.EXE now functions correctly on Windows 98. The version released with the original V2.6 BACNAT failed to recognise the 4 cursor movement keys or the Insert, Home, Page-Up, Delete, End and Page-Down keys when running on Windows 98;

- GLCONS.EXE now recognises the <SHIFT><TAB> key when running on Windows 95 and Windows 98;

- GLCONS.EXE now recognises the "£" character when running on Windows NT Workstation;

- The problem that caused the screen to scroll unexpectedly, resulting in the status-line being over-written by the top line of the application screen after a baseline clear, has been fixed. This problem occurred in a variety of utilities and Cobol applications. For example, in $CUSP after <ESC> is keyed to the baseline prompt of the Printer Maintenance screen.

The revised SPEEDBAS.EXE includes the following features:

- The option to hold Speedbase Btrieve databases in Btrieve 7.x format when using Pervasive SQL (aka Btrieve 7) is now supported. This option is fully described in sections C.12 and D.11. Mixed Btrieve configurations (i.e. combinations of Btrieve 6.x and 7.x format databases) are supported.

Important note: Any site that is currently using an unofficial pre-V1.56 SPEEDBAS.EXE to access Btrieve 7.x format databases MUST rebuild all existing V7.x Btrieve format Speedbase databases immediately after installing the V1.56 SPEEDBAS.EXE: As soon as the V1.56 SPEEDBAS.EXE has been installed and loaded all V7.x Btrieve databases must be rebuilt, using $BADN option 2, before any attempt is made to access the databases using a Speedbase application;

- SPEEDBAS.EXE has been enhanced to include the "change path to database" functionality. However, $BADN does **NOT** currently support the "Change path to database" option (i.e. option 6) on GSM (Windows);

- A serious problem, that results in severe database corruption when two, or more, (fast) database rebuilds and/or (fast) conversions are attempted simultaneously, has been fixed. This problem will only occur with the (evaluation) V1.53c SPEEDBAS.EXE;

- SPEEDBAS.EXE now supports the "fast" database conversion/rebuild mode. This option is enabled by default and cannot be disabled;

- SPEEDBAS.EXE supports a special diagnostic operation that is reserved for future use.

GSM (Windows) BACNAT variant 2.7

The V2.7 BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE, GLCONS.EXE and GLSERVER.EXE:

- The GUI controller in GLOBAL.EXE (i.e. for "fat client" installations) is fully compatible with the V2.3 Global Windows Workstation (GUI) product. These changes have resulted in a large number of new Registry settings and new options in the GLOBAL.INI file. Please refer to the V2.3 Global Windows Workstation Notes (MGUNV2.3) and Global System Manager (Windows) Configuration Notes (C5661 and C5663) for further details;

- The V2.3 Global Windows Workstation (GUI) product (i.e. GSMWIN32.EXE for "thin client" configurations) is now distributed with the V2.7 Global System Manager (Windows) software. For diskette configurations the GUB (GUI installation) diskette is distributed with the B5661 and X5661 diskettes; for CD configurations the GUA and GUB installation directories are distributed on the Global System Manager (Windows) CD. Please refer to the V2.3 Global Windows Workstation Notes (MGUNV2.3) for further details;

- The SVC-67 module in GLOBAL.EXE and GLCONS.EXE now supports the new operation required by Global System Manager V8.1i, Global 3000 V4.5 and Global Reporter V1.4. **GLOBAL 3000 V4.5 WILL ONLY OPERATE ON THE V2.7, OR LATER, GLOBAL SYSTEM MANAGER (WINDOWS NT) BACNAT VARIANT**;

- The SERIAL controller in GLOBAL.EXE and GLCONS.EXE now supports serial consoles on Windows 95 and Windows 98 (see below);

- The SERIAL controller in GLOBAL.EXE and GLCONS.EXE has been enhanced to recognise the following new registry option to select the serial port mode:

    ..\Screens\Serial*nn*\Mode

The default mode is 9600,N,8,1,X (i.e. 9600 baud, No parity, 8 data bits, 1 stop bit, X-on/X-off protocol).

If the Mode setting is not specified on Windows NT, Global System Manager will reprogram the serial mode as specified in the Windows control panel for the specified COM device. If the Mode setting is not specified on Windows 95 or Windows 98, Global System Manager will NOT attempt to reprogram the serial port (i.e. the last port setting, or the Windows default if no other application has used the serial port, will be used);

- The DOSPRINT controller in GLOBAL.EXE and GLCONS.EXE has been enhanced to recognise the following new registry option to select the serial port mode:

   ..\Printers\DOSPrint\5*nn*\Mode

The default mode is 9600,N,8,1,X (i.e. 9600 baud, No parity, 8 data bits, 1 stop bit, X-on/X-off protocol).

If the Mode setting is not specified on Windows NT, Global System Manager will reprogram the serial mode as specified in the Windows control panel for the specified COM device. If the Mode setting is not specified on Windows 95 or Windows 98, Global System Manager will NOT attempt to reprogram the serial port (i.e. the last port setting, or the Windows default if no other application has used the serial port, will be used).

- A problem in the TRAMS interpreter in GLOBAL.EXE and GLCONS.EXE has been fixed to allow $COBOL to be used on multi-user Global System Manager (Windows) configurations. The symptom of this problem was a large number of unexplained compilation errors when using $COBOL;

- A problem in GLOBAL.EXE and GLCONS.EXE that causes the Global System Manager system date to advance by up to several years if the Global client has been running continuously for more than 49.7 days, has been fixed;

- A problem with the "switch GUI mode off" handling in GLOBAL.EXE has been fixed. The symptom of this problem was a performance degradation when running applications or utilities (e.g. $BAGDN) in "non GUI mode" on terminal type $.711, $.714 etc.;

- The Global System Manager (Windows) File Executive in GLOBAL.EXE, GLSERVER.EXE and GLCONS.EXE has been enhanced to include the new operations supported by the $UNLOCK and $CLOSE utilities. Note that the $UNLOCK and $CLOSE utilities have NOT yet been released with external versions of Global System Manager.

- The Discrete Data File (DDF) controller in GLOBAL.EXE, GLSERVER.EXE and GLCONS.EXE has been enhanced to recognise the following new (highly-specialised) registry option:

    ..\Data\DiscreteDatafiles\DDF*n*\WriteThroughCache

When this option is enabled the Windows NT cache is effectively used as a Write-Through buffer. For most installations it should never be necessary to enable this option.

- The DISKETTE controller in GLOBAL.EXE, GLSERVER.EXE and GLCONS.EXE has been enhanced to recognise a number of new values for the 'Diskette' registry value. This following values are now recognised:

0	Diskette disabled
1	Diskette enabled (using physical locking)
2	Diskette enabled (using volume locking)
3	Diskette enabled (no locking)
>4	Same as 1

The new values (i.e. 2 and 3) MAY overcome some problems experienced when using some type of diskette drives on Windows 95 and Windows 98.

In addition, if the 'DiagnosticDisplays' option is enabled the DISKETTE controller displays the error code returned by the DOS-compatible diskette operation (i.e. the operation that is used to access the diskette drive on Windows 95 and Windows 98).

Furthermore, the error code returned when a 'media change' error is reported has been changed from the non-retryable error "H" to a retryable error –1;

- The status-line handling in GLSERVER.EXE has been enhanced to allow up to 255 Global Clients (the limit was 228). This change fixes the unexpected errors that may occur when Global Clients are configured with node-id's 'A' to 'Z';

- The status-line handling in GLSERVER.EXE has been enhanced to fix a problem that results in a spurious 'Binding Handle is Invalid' error if the Global System Manager 'Master NodeID' is set to a (strictly invalid) value outside the range 'A' to 'Z';

- The client-server logic in GLOBAL.EXE and GLCONS.EXE has been enhanced to recognise the following new (highly-specialised) registry option:

    ..\Global\Client\RPCWriteReadOp

When this option is enabled the Global Client uses a Write/Read RPC opcode instead of a Read RPC opcode, where appropriate. Enabling this option will reduce the number of

Windows NT page faults that may be generated by the Global Server (sic) under some conditions.

GSM (Windows) BACNAT variant 2.8

The V2.8 BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE, GLCONS.EXE and GLSERVER.EXE.

Important Note: Due to the rapid development of GSM (Windows) the released V2.8 BACNAT variant is expected to be quickly replaced by newer versions. Please check the Technology pages on the Global web-site for details of updates to the GSM (Windows) BACNAT software.

● The GSM (Windows) nucleus in both GLOBAL.EXE and GLCONS.EXE includes support for the 32-bit GSM run-time system. Please see Appendix F for further details.

● True concurrency is now supported on GSM (Windows) when a "GUI mode" TAP (e.g. $.711) is being used. Until this enhancement, although true concurrency (i.e. multiple partitions executing concurrently), was supported on "text mode" TAP's (e.g. $.712 & $.716), background partitions would suspend on "GUI mode" TAP's (e.g. $.711). The following registry option must be set to "On" to allow true concurrency:

   ..\Global\Client\Nucleus\ConcurrentGUI

   Important Note: This registry option is subject to change in future versions of GSM (Windows).

   This option affects all the screens configured on the Global Client (i.e. the fat-client via the "GUI" console controller as well as any thin-client screens connected via either the "Network" or "Serial" console controllers);

● The Global Server automatically listens on BOTH "Local RPC" and the RPC interface specified in the registry. This feature allows a Global Server to service requests from both a local Global Client (via the "Automatic-Local RPC connection") and remote Global Client(s) (via the RPC connection specified in the registry i.e. normally ncacn_ip_tcp). When this feature is enabled, the following message will appear on the GLSERVER.EXE messages screen:

   Enabling additional local RPC connection, GLSERVER_x

   This feature allows the intra-computer Global Client to communicate with the Global Server using the ncalrpc protocol which is always faster than the ncacn_ip_tcp protocol. The Endpoint used by the Global Server for the "Automatic-Local RPC" connection is always "GLSERVER_*x*" where *x* is the server node-id e.g. GLSERVER_A for server "A" etc.). Note that if the Endpoint key is missing from Global Client section of the registry the default Endpoint appropriate for the local

Global Server will be used. For example, the ValueNames under the key for server "L" in the Client section of the registry can contain either:

    ..\Global\Client\Servers\L\ProtocolSequence = ncalrpc
    ..\Global\Client\Servers\L\NetworkAddress = <blank>
    ..\Global\Client\Servers\L\Endpoint = GLSERVER_L
or:
    ..\Global\Client\Servers\L\ProtocolSequence = ncalrpc
    ..\Global\Client\Servers\L\NetworkAddress = <blank>

● In addition to the Automatic-Local RPC connection the Global Server can be customised to use an additional non-RPC interface to communicate with a Global Client running on the same PC. This extra functionality, which supplements the Standard RPC interface (i.e. the RPC interface specified in the ..\Global\Servers section of the registry) and Automatic-Local RPC (described above) is enabled by setting the following registry entry:

    ..\Global\Servers*x*\EnableGSMRPC

where *x* is the server node-id (e.g. A, B, etc.). If this option is enabled, the following message will appear on the GLSERVER.EXE messages screen:

    Enabling gsmlrpc connection

To configure a local Global Client to use the GSMRPC interface, which is much faster than Local RPC and very much faster than intra-computer TCP/IP RPC, the following registry option must be set:

    ..\Global\Client\Servers*x*\ProtocolSequence = gsmlrpc

The following registry option must be present but must be set to <blank>:

    ..\Global\Client\Servers*x*\NetworkAddress

The following registry option can either be absent or, if specified, must be set to "GLSERVER_*x*" (where *x* is the server node-id):

    ..\Global\Client\Servers*x*\Endpoint

Important Note 1: The new Server registry ValueName is "EnableGSMRPC" whereas the new Global Client registry Value for the ProtocolSequence ValueName is "gsmlrpc". This subtle difference is deliberate.

Important Note 2: At the time of writing, only a single "local" Global Client can connect to a Global Server using the "gsmlrpc" protocol. Thus, this new option

is not currently available for Symmetric Multiple Client (SMC) configurations. This restriction is being addressed.

● The DOSPrint printer controller has been enhanced to recognise the following new options in the Global\Client\Printers\DOSPrint\5nn section of the registry:

PostCloseProgramName — This option specifies the name of an optional Windows program to be invoked immediately after the Windows print file has been closed. This option only applies to the DOSPrint "print to file" or "print to spool directory" options – it does NOT apply to the "print to DOS device" option;

AppendFileNameAfterClose — If the PostCloseProgramName option has been specified (see above) this option determines whether the name of the nascent Windows print file should be passed as a command line parameter to the program identified by the PostCloseprogramName option;

CreateTempFileName — If the PostCloseProgramName option has been specified (see above) this option determines whether the name of the Windows print file should remain fixed thus allowing the name of the intermediate print file to be re-used. If this option is enabled, the name of the print file is always temp*xxhh*.txt (where *xx* is the Global Client node-id and *hh* is the User Number);

PostCloseAlias — By default, if the AppendFileNameAfterClose option is enabled the name of the file appended to the PostCloseProgramName is the full pathname of the nascent Windows print file. This file-name may not be appropriate in thin-client configurations where the Windows program is initiated on the thin-client PC (i.e. rather than the server) and the share-name of the print spool directory is different from the name specified in the "Name" key in the registry. For example, if the "Name" option is set to "C:\gsmnt\prints\" on the PC running GLOBAL.EXE and this directory is mapped to "\\tisgsmpc\prints" on the PC running the thin-client (i.e. the PC on which the invoked program will be running) then the PostCloseAlias option should be set to "\\tisgsmpc\prints\";

● The WinPrint printer controller has been enhanced to recognise the following new options in the Global\Client\Printers\WinPrint\5nn section of the registry:

FlushOnAlignment If this option is enabled the Printer Executive informs the WinPrint controller immediately (i.e. rather than waiting for the Timeout period to elapse) that the contents of print file must be flushed out to the printer because a Stationery Alignment Message has been displayed;

FaxInterface This option allows the WinPrint option to interface directly to the LG-Fax product. Further details are available upon request;

PrintViaSeparateThread This option is reserved for future use.

Furthermore, a problem in the WinPrint controller that caused an "Error 6 from EndDocPrinter – The handle is invalid" if either the Timeout or FlushOnAlignment options are enabled in the WinPrint section and the DiagnosticDisplay option, has been fixed.

● Auxiliary (i.e. back-of-screen) printing is now supported in GSM (Windows). To enable this option changes to both the Global Configuration File and the Windows registry are required. The following example dialogue adds an Aux. Printer (controller name $AUXPRI) to the configuration file (provided the date of the A.W1 Action File is 15/02/99, or later):

```
CONTROLLER [ 4] (     ) :$AUXPRI  SCREEN AUXILIARY PRINTER
UNIT NUMBER (  521):
DESCRIPTION (SCREEN AUXILIARY PRINTER ) :
HARDWARE FORM FEED (Y):
MAXIMUM PAGE WIDTH (  132):
TIME-OUT IN TENS OF SECONDS (   2):
SPOOLER CONTROL BITS (#00):
PRINTER EXECUTIVE FLAG BYTE (#FF):
```

Note the absence of controller options in the CFUPDATE dialogue.

The following options in the Global\Client\Printers section of the registry must be added:

AuxPrint\5nn\ConsoleNumber This must specify the Console Number of the screen to which the Aux. Printer is attached. The console controller must be either "Serial" or

"Network". A value of 0 indicates a "floating" Auxiliary Printer, in which case all the other options are ignored (the options actually used are taken from the registry settings of the "real" Aux. Printer that the "floating" Aux. Printer is mapped to);

AuxPrint\5nn\ScreenType   This option specifies the screen type:

0	Invalid
1	PCWS
2	TCL Nyce and Wyse-60
3	TVI range
4	Reserved for diagnostics (reverse video)
5	Reserved for Global Windows Workstation
6	Reserved for diagnostics (transparent)
7 – 9	Reserved for future use
10 – 19	Reserved for Global Windows Workstation

Important note: At the time of writing, the released version of the Global Windows Workstation does **NOT** support Auxiliary Printing although evaluation versions that do support Aux. Printing may be down-loaded from the Technology section of the Global web-site.

AuxPrint\5nn\PrintingMode   This option specifies the printing mode:

0	Invalid
1	Printing has higher priority than displays
2	Printing has lower priority than displays

Note that an "ImmediateError" option is not supported.

- The Global System Manager (Windows) SETUP.EXE utility has been enhanced in several areas:

- SETUP allows the choice between the Speedbase Btrieve Gateway (SPEEDBAS.EXE) or the Speedbase SQL Server Gateway (SPEEDSQL.EXE and SPEEDGAT.EXE - see Appendix E). If the Speedbase SQL Server option is selected the SQL User, Password and default database size can be configured;

- SETUP allows the choice between a Global 3000 style colour scheme and a Global 2000 style colour scheme. If the Global 3000 style is selected, the default text colour combination for non Speedbase applications will be "black on grey". If a Global 2000 style is selected the default text colour combination for non Speedbase applications

will be "green on black". See Appendix B, and section A.4.2, of the Global Windows Workstation V2.3 Notes for further details;

● The current installation directory is preserved over the sequential installation of the Global Client, Global Servers and Speedbase Gateway;

● GLSSTART.EXE is no longer installed for a Global Client only installation;

● The "gsmlrpc" Protocol Sequence (short-hand form = "GSM") is allowed during the Global Client installation;

● The "EnableGSMRPC" setting can be specified during the Global Server installation.

● The File Executive module in both the Global Client and the Global Server has been enhanced to support an extended 32-bit Lock operation. A problem with Sense Message displayed when a GSM disk or diskette I/O Error is reported, has been fixed. Furthermore, the File Executive has been upgraded to support User Numbers up to 250 (the previous limit was 99);

● The Printer Executive module in the Global Client has been enhanced to support User Numbers up to 250 (the previous limit was 99);

● The Console Executive module in the Global Client has been enhanced to support a number of new options:

..\Global\Client\Nucleus\CheckGWWFLag	When this option is enabled the TAP load mechanism will check that the setting of the GlobalWindowsWorkstation flag in the registry for the Serial or Network controller (see section 5.6) agrees with the setting of the "GWW" flag in the TAP (see section 2.8). If a mismatch is detected an INVALID TAP (GUI) error message will be displayed. This option has been introduced to prevent an inappropriate TAP from being used with the Global Windows Workstation;
..\Global\Client\Nucleus\ConsoleDiagnostics	When this option is enabled all the characters displayed on the first console, until the TAP is loaded, are written to a diagnostic file conslog.bin in the Global directory.

	This option can be used to diagnose fatal GSM Load errors;
..\Global\Client\Nucleus\ConsoleLogging	When this option is enabled all the characters displayed on the first console are written to a diagnostic file conslog.bin in the Global directory;
..\Global\Client\Nucleus\LogKeystrokes	When this option is enabled all keystrokes processed by the Console Executive are written to a diagnostic file keylog_*nn*.bin (where *nn* is the Console Index) in the Global directory;

The Console Executive also supports the option to display Status Line messages in a Windows Dialogue box (for use with TAP's $.751 and $.754 – see section 2.8). Furthermore, the Console Executive now supports a highly-specialised play-back mechanism which is implemented by reading characters from the file gsmjob_*xx*.txt (where *xx* is the Global Client node-id).

● The $TAPE controller for GSM (Windows) has been enhanced in several areas. The special End-Of-Media error from the Write operation is treated specially and is returned as an error "S" to $TAPE. Detailed diagnostic and tape status information is displayed when the diagnostic version of $TAPE (i.e. $TAPED) is being used. The Tape Drive Information is displayed, in a Windows dialogue box, when $TAPED is run before the main menu is displayed; the Media Information is displayed, also in a Windows dialogue box, by the $TAPE Load operation. Thus, the Media Information dialogue box may appear several times during a "composite $TAPE operation" such as Save and Verify.

The following new registry options are recognised by the $TAPE controller:

..\Global\Client\Tape\Partitioning	If this option is enabled, $TAPE will create a single partition of the maximum length for each Tape Header written to the tape. In addition, the tape is positioned at the beginning of the first partition for every Tape Load operation. This option should only be enabled for DAT drives. Note that it is NOT possible to select a specific tape partition. Tape Partitioning is NOT supported for QIC drives;

..\Global\Client\Tape\Compression

This option enables Data Compression. If data compression is not supported by the tape drive a warning message will be displayed;

..\Global\Client\Tape\DataPadding

This option enables Data Padding. Data Padding may be required to maintain tape streaming rates and will result in faster backups at the expense of reduced "actual" tape capacity. If data padding is not supported by the tape drive a warning message will be displayed.

- A problem in GLOBAL.EXE that causes Memory Violations and General Protection Errors when $BYE is run on a configuration that includes one, or more, Network screen controllers, has been fixed;

- The Caption Text is prefixed with the Global Client node-id, allowing the node-id to be readily determined from the Windows Task Bar. Note that this option is only enabled if the /EN:xx GLOBAL.EXE command line argument has been used to specify the node-id for Symmetric Multi-Client (SMC) or Asymmetric Multi-Client (AMC) configurations;

- A problem with the Network console controller that caused binary-zeroes to be ignored, has been fixed;

- The DiscreteDataFiles controller has been enhanced to return a unique error "f" (sic) if a Read or Write operation fails because another process has locked a portion of a .SVL file. This error will occur when a Backup Manager application has opened a .SVL file in non-shared mode. Furthermore, a problem in the DiscreteDataFile controller that can result in a Memory Violation upon closing the Global Server (or running $BYE on the Global Client) when read-only sub-volumes have been accessed under some conditions, has been fixed;

- SVC-61 has been enhanced to maintain a list of Open File Handles. A new operation, DSFUNC=126, is available to close all the Open File Handles. **Important note**: This feature is subject to change in future versions of GSM (Windows);

- A new SVC-80 has been implemented which provides faster conversions for $BBS and $COMPRES.

- The following new registry option provides an easily customised override to the Number of Memory/Monitor Pages patched into the $MONITOR file by the $F PAM and CMP commands:

..\Global\Client\Nucleus\MaximumMemoryPages

The GSM start-up code always uses the higher of the value patched into $MONITOR and the value of the MaximumMemoryPages registry setting;

- The following new registry option allows the name of the Global Configuration file to be specified:

  ..\Global\Client\ConfigurationFileName

Although this option can be used it is reserved for future use (for AMC configurations);

- The following new registry option allows the name of the GSM "Bootstrap device" to be specified:

  ..\Global\Client\BootDevice

Although this option can be used, to allow GLOBAL.EXE to be started without specifying any command line arguments (e.g. by doubling-clicking on the GLOBAL.EXE icon in Windows Explorer), it is reserved for future use (for AMC configurations);

- The following registry options pertain to the Speedbase SQL Server Gateway (SPEEDSQL.EXE and SPEEDGAT.EXE) and are described in Appendix E:

  ..\Global\Speedbase\SpeedbaseSQLPassword
  ..\Global\Speedbase\SpeedbaseSQLUser
  ..\Global\Speedbase\DefaultDatabaseSize
  ..\Global\Speedbase\FastConversion
  ..\Global\Speedbase\IdentityFillin

- The following registry options pertain to the 32-bit run-time environment and are described in Appendix F:

  ..\Global\Client\Nucleus\SVC79Diagnostics
  ..\Global\Client\Nucleus\SVC79DiagLevel
  ..\Global\Client\Nucleus\PageTableEntries
  ..\Global\Client\Nucleus\TrapTableEntries
  ..\Global\Client\Nucleus\LinkStackEntries

- The V2.8 GLOBAL.EXE includes the V2.3t Global Windows Workstation (GUI) module. This version of the GUI module recognises the following new registry options:

  ..\Global\Client\Screens\GUI\Miscellaneous\Enable8BitMode
  ..\Global\Client\Screens\GUI\Miscellaneous\EnableFormMode

..\Global\Client\Screens\GUI\Miscellaneous\EnableIgnoreFields
..\Global\Client\Screens\GUI\Miscellaneous\FullToolbar
..\Global\Client\Screens\GUI\Miscellaneous\ChangePartitionTrigger
..\Global\Client\Screens\GUI\IsoTranslations\ISOChar*nnn*

These options, which are reserved for future expansion, should not be used and will be fully described in the Global Windows Workstation V2.4 Notes.

● The following registry options are reserved for future use, and should NOT be used:

..\Global\Client\UseConfigurationFile
..\Global\Client\SerialPortDriver\nn\Name
..\Global\Client\SerialPortDriver\nn\Mode
..\Global\Servers\UseConfigurationFile
..\Global\Client\Nucleus\SVC86Diagnostics

The revised (V1.67) Speedbase Gateways include the following features:

● First release of the Speedbase SQL Server Gateway (SPEEDSQL.EXE & SPEEDGAT.EXE). See Appendix E for full details of the Speedbase SQL Server option;

● Changes to the Speedbase Btrieve Gateway to fix the Btrieve error 238; STOP 25403 problem that can occur when a previously disconnected Global Client re-attaches to the Gateway and deletes the locks of the Global Client that immediately precede it in the Gateway's list of attached clients;

● Support for the "Get Lock Information" operation used by the $BAST Display Locks function (see section 2.8);

● Support for the 32-bit Speedbase Database manager (see Appendix F);

● Support for mixed SPAM/Speedbase database operations.

Please refer to the Global System Manager (Windows) Configuration Notes for a full list of released versions of the Speedbase Gateways.

GSM (Windows) BACNAT variant 2.9A

The V2.9 BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE, GLCONS.EXE, GSMCONS.EXE and GLSERVER.EXE. Note that the Production version of the GSM (Windows) BACNAT is actually V2.9A (i.e. rather than V2.9).

● The 32-bit run-time system in the GSM (Windows) nucleus in both GLOBAL.EXE and GLCONS.EXE has been upgraded extensively. **ALL 32-BIT DEVELOPERS AND END-USERS SHOULD UPGRADE FROM BACNAT V2.8 TO BACNAT V2.9A;**

- There appears to be some confusion regarding the various fat vs. thin, GUI vs. console options available with GSM (Windows). The following table should help:

Client type	Window or Console application	Name of executable	aide-mémoire
Fat	Window (GUI) application	GLOBAL.EXE	FATGUI
Thin	Window (GUI) application	GSMWIN32.EXE	THINGUI
Fat	Console/full-screen application	GLCONS.EXE	FATCONS
Thin	Console/full-screen application	GSMCONS.EXE	THINCONS

The current Production variants of these components are:

Module	Variant
GLOBAL.EXE	V2.9A/V2.5c
GLSERVER.EXE	V2.9A
GLCONS.EXE	V2.9A/V2.9
GSMCONS.EXE	V2.9

See below for full details of the GSMCONS.EXE telnet emulator;

- The GLOBAL.EXE and GLCONS.EXE components have been enhanced to automatically create a log file, *gsminfo.bin*, when GSM is initiated. This log file contains various system information (e.g. BACNAT variant, GSM version, GSM revision, configuration code, Windows version etc.).

  PLEASE PROVIDE A COPY OF THE PRE-COMPRESSED *gsminfo.bin* FILE WHEN REPORTING ANY TYPE OF PROBLEM WITH GSM (WINDOWS NT);

- The GLREGED.EXE template file, GLMACH.TLT, includes several new settings that start with the "%" character. **THESE SETTINGS ARE RESERVED FOR FUTURE USE AND SHOULD NOT BE USED;**
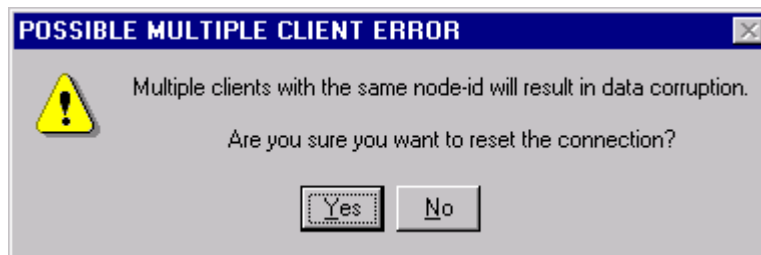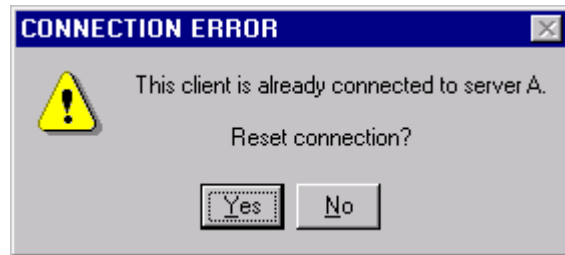
- The default behaviour when a Global Client is already connected to a Server has been changed. By default, the following Fatal Connection Error dialogue box will appear:

FATAL CONNECTION ERROR ✕

❌ This client is already connected to server N.

[OK]

This default action can be modified by setting the following registry setting to "On":

..\Global\Client\AllowClientReconnection

The severity of the warning message that appears when a Global Client is already connected to a Server (and the AllowClientReconnection option is enabled) has been increased. Two dialogue boxes, rather than one, now appear:

CONNECTION ERROR ✕

⚠ This client is already connected to server A.

Reset connection?

[Yes] [No]

POSSIBLE MULTIPLE CLIENT ERROR ✕

⚠ Multiple clients with the same node-id will result in data corruption.

Are you sure you want to reset the connection?

[Yes] [No]

ONLY IGNORE THESE WARNINGS IF YOU 100% SURE THAT THERE ARE NO CLIENT NODE-ID CLASHES OTHERWISE SEVERE DATA CORRUPTION WILL OCCUR;

- Changes have been made to the $E handling in GLOBAL.EXE and GLCONS.EXE to allow the "ExitOn$E" option in the GUI GSMWIN32.INI file to have an effect when a

non-GUI TAP (e.g. $.712) is being used. The "ExitOn$E" option (in GSMCONS.INI) is also supported by GSMCONS.EXE (see below) when a text-mode TAP (i.e. $.730 or $.731) is being used;

- The DOSPrint controller now recognises the following new option in the registry:

  ..\Global\Client\Printers\DOSPrint\5*nn*\FixedFileSuffix

  If this option is set to a 3 character extension (e.g. "txt" or "bat") the DOSPrint controller, when writing to a Spool Directory, will create filenames of the form:

  xxxxxnnn.sss

  where *nnn* is an incrementing number, *sss* is the filename suffix and xxxxx are the first 5 characters of the Global filename. Note that if the "FixedFileSuffix" option is set to anything other than a 3 character string it will be ignored;

- A problem, introduced by the changes to implement the 32-bit run-time option, which cause the V2.8 Global Client to appear to hang if all the servers P,Q,R,S,T,U,V,W have been accessed has been fixed;

- A series of new registry settings provide more control over the automatic "linear" NETWORK Port number adjustment for Symmetric Multiple Client (SMC) configurations:

  ..\Global\Client\PortNumberForNode*XX*

  where *XX* is any 2 digit decimal number between 27 and 99.

  The "natural" node to network port mapping is:

  ..\Global\Client\PortNumberForNode28=24
  ..\Global\Client\PortNumberForNode29=25
  ..\Global\Client\PortNumberForNode30=26

  To change the telnet port used for node 30 to 1000, for example:

  ..\Global\Client\PortNumberForNode30=1000

  Before changing port numbers their status must be ascertained. The Windows NETSTAT command may be useful;

- When the Symmetric Multiple Client (SMC) option is being used, the "SingleInstance" option must be disabled, otherwise the multiple clients cannot be started. However, the "SingleInstance" option is extremely useful and should normally be enabled at all times. GLOBAL.EXE has been enhanced to tag the Global Client node-id, specified by

the /EN command line option, to the string "Global System Manager" that is used to register the Global Client to Windows. This change allows the "SingleInstance" option to be enabled in SMC configurations. **YOU ARE STRONGLY ADVISED TO ENABLE THIS OPTION AT ALL TIMES;**

- The GLCONS.EXE module has been enhanced to include all the V2.9A features that are included in GLOBAL.EXE. As documented in section A.6, the version/variant number of GLOBAL.EXE consists of two parts: The GSM (NT) nucleus version (e.g. V2.9A) and the Global Windows Workstation version (e.g. V2.5b).

  Similarly, the version/variant number of GLCONS.EXE also consists of two parts: The GSM (NT) nucleus version (e.g. V2.9A) and the "GSMCONS" emulator version (e.g. V2.9). Both these version numbers are displayed on the GLCONS.EXE caption bar;

- GLCONS.EXE has been repackaged to prevent the appearance of spurious characters appearing on the screen immediately after the TAP has been loaded;

- The default value for the "MaximumMemory" setting was 4096 (i.e. 4Mb). This has been increased to 32768 (i.e. 32Mb). The maximum value for the "MaximumMemory" setting was 16384 (i.e. 16Mb). This has been increased to 131072 (i.e. 128Mb);

- The Console Executive has been enhanced to alter the sequence of displays that take place when a partition is refreshed. This change fixes a problem that causes some fields in Speedbase applications, or lines in $SDE, to switch from dim to bright during a screen refresh;

- The Printer Executive now supports a new operation that is used by the Printer Control File handler to determine if a printer has been designated a "Pooled Printer";

- A problem that causes GLOBAL.EXE to crash if a Pooled Printer has been dynamically removed from the configuration (e.g. if the printer unit has is associated with a missing COM port), has been fixed;

- A very obscure problem in the Printer Executive has been fixed: Consider a program that opens a printer (e.g. 500) but exits without explicitly closing the printer (because of a PGM CHK, for example). Between the printer open and the abnormal exit, another user opens a different printer (e.g. 501) so that printer 501 becomes the "last printer used". When the first user returns to the READY prompt or the main menu, the printer is reset. However, the bug caused the "last printer used" (i.e. 501) to be reset rather than the "last printer opened by that user" (i.e. 500). The second user suffers an ERROR N when attempting to print to 501 (after it has been inadvertently closed);

- A bug in the WinPrint controller has been fixed that caused the following registry options to be ignored:

      ..\Global\Client\Printers\WinPrint\5*nn*\FlushOnAlignment

..\Global\Client\Printers\WinPrint\5*nn*\FaxInterface
..\Global\Client\Printers\WinPrint\5*nn*\PrintViaSeparateThread

if the following setting is left blank:

..\Global\Client\Printers\5*nn*\WinPrint\Name

- A problem in the AuxPrint controller that results in a spurious NOT READY error has been fixed. Furthermore, two new options have been added to enable Polled Printing mode, which will reduce the performance overhead on other Global applications when using the AuxPrint controller. Set the following option to "On" to enable the Polled Printer mode:

..\Global\Client\Printers\AuxPrint\PolledMode

The value of the following setting can be used to alter the relative priority of the AuxPrint process and the other Global applications:

..\Global\Client\Printers\AuxPrint\PrintPollDivisor

Increasing the setting should reduce the overhead imposed by the AuxPrint controller on other Global applications;

- A problem in the GSMRPC Client-Server interface that caused the Global Client to hang when attempting to access an inaccessible Global Server, has been fixed;

- The Console Executive has been enhanced to support a new operation that returns the Connection Status of a NETWORK port. This operation is called by a new $STATUS "CLR" command (see section 2.9.1) which automatically restarts (i.e. clears) all failed connections;

- The Console Executive has been enhanced to support the new op-code required by the new CACND$ sub-routine;

- A problem in the SVC-61 Find First File function has been fixed. This problem can cause unexpected results in the FILECONV List Directory option;

- The SVC-61 "Get Version" function has been enhanced to return the Windows major and minor version numbers, the Platform ID and the Build Number;

- A new SVC-61 operation has been implemented to return the actual amount of memory allocated dynamically by GSM (Windows);

- Although it is our intention to include an "enlarge sub-volume" facility in the GLDFMAIN.EXE utility this functionality has not been implemented yet. As a stop-gap

solution, the GSM (DOS) GLENDDF.EXE utility is now distributed with GSM (Windows);

- The 32-bit diagnostics code has been rationalised. The following 2 registry settings:

      ..\Global\Client\Nucleus\SVC79Diagnostics
      ..\Global\Client\Nucleus\SVC79DiagLevel

  are used as follows:

SVC79Diagnostics	SVC79DiagLevel	Meaning
Off	Don't care	Diagnostics disabled
On	0	Reserved for future use
On	1	Log SVC-79 hard errors
On	2	Log all SVC-79 errors
On	3	Log all SVC-79 operations
On	4	Reserved for future use
On	5	Reserved for future use
On	6	Reserved for future use
On	7	Reserved for future use
On	8	Reserved for future use
On	9	Reserved for future use

- The algorithm used to allocate 32-bit memory has been improved. In all versions prior to V2.9A, the memory for 32-bit pages was allocated within the size limit defined by the following registry setting:

      ..\Global\Client\MaximumMemory

  This simplistic technique lead to the following warning message appearing unexpectedly on large multi-user configurations:

      INITIATION WARNING 470 – 32-BIT SERVICES NOT AVAILABLE

  For 16-bit only configurations this situation can be avoided by setting the following registry setting to "Off":

      ..\Global\Client\Nucleus\Enable32Bit

  For 32-bit configurations, the memory for 32-bit pages is now allocated within the size limit defined by the following registry setting:

      ..\Global\Client\Nucleus\MaxMemory32Bit

Consequently, the relatively large amount of memory allocated for 16-bit memory-banks for large multi-user configurations will not impinge on the memory allocated for 32-it pages;

- The 79-column restriction with GLCONS.EXE and GSMCONS.EXE (see below) when running on Windows 95 and 98 has been removed. It is now possible to use the 80-column TAP's (e.g. $.730) with both GLCONS.EXE and GSMCONS.EXE on Windows-95 & 98.

    IMPORTANT NOTE: Despite the special code to support this feature on Windows 95 & 98, the 80th character position on the baseline (i.e. line 24) remains reserved and cannot be used;

- A new telnet emulator, GSMCONS.EXE, has been released. Unlike the Global Windows Workstation (GSMWIN32.EXE), which is installed using a separate installation procedure, GSMCONS.EXE is automatically installed when the GSM (Windows) Global client is installed. Although internal, evaluation versions of this emulator have been released version V2.9A is first "official", external version. As the table at the start of this section indicates, GSMCONS.EXE is the "thin-client" version of the GLCONS.EXE non-GUI, full-screen "fat-client".

    The GSMCONS.EXE emulator is configured by the GSMCONS.INI file (i.e. in the same way that GSMWIN32.EXE is configured by the GSMWIN32.INI file). However, the contents of the GSMCONS.INI file are considerably simpler than the complex GSMWIN32.INI file. Furthermore, the Common INI File and Customisation INI file options supported by GSMWIN32.EXE (see the Global Workstation Notes for further details) are NOT supported by GSMCONS.EXE.

    The GSMCONS.INI file contains the following sections and options:

    [tcpipparameters]
    HostID=192.168.1.109
    Port=23

    [miscellaneous]
    ExitOn$E=On
    KeyboardTimeout=0

    [buffers]
    DisplayBufferSize=512
    SharedBufferSize=2048
    ReceiveBufferSize=512

    [printers]
    AuxiliaryPrinter=COM13:38400,N,8,1,X
    AuxPrinter0=COM1:38400,N,8,1,X

```
AuxPrinter1=COM2:38400,N,8,1,X
AuxPrinter2=COM3:38400,N,8,1,X
AuxPrinter3=COM4:38400,N,8,1,X
AuxPrinter4=COM5:38400,N,8,1,X
AuxPrinter5=COM6:38400,N,8,1,X
AuxPrinter6=COM7:38400,N,8,1,X
AuxPrinter7=COM8:38400,N,8,1,X
AuxPrinter8=COM9:38400,N,8,1,X
AuxPrinter9=COM10:38400,N,8,1,X
```

Important Note: Although comments are allowed in the GSMCONS.INI file each comment must start on a new-line. Comments on the same line as an entry are not allowed and effectively invalidate the entry. For example, the following comment format is allowed:

```
; This is a comment for the next line
ExitOn$E=On
```

Whereas the following comment format will generate an error when GSMCONS.EXE is loaded:

```
ExitOn$E=On          ; This is a comment for the current line
```

The "HostID" and "Port" number select the GLOBAL.EXE (or GLCONS.EXE) host. If the "ExitOn$E" option is enabled, GSMCONS.EXE will terminate automatically and disconnect telnet connection, when the operator runs the $E command.

The options in the [buffers] section should not be amended, except under exceptional circumstances.

Auxiliary Printing (i.e back of screen printing) is supported by GSMCONS.EXE. The various options in the GSMCONS.INI file correspond to the value of the following setting in the registry of the host computer:

..\Global\Client\Printers\AuxPrint\5*nn*\ScreenType

ScreenType value	Printer selected in GSMCONS.INI	Escape sequence
5	AuxiliaryPrinter	1B6Exx
10	AuxPrinter0	1B6D30xx
11	AuxPrinter1	1B6D31xx
12	AuxPrinter2	1B6D32xx
13	AuxPrinter3	1B6D33xx
14	AuxPrinter4	1B6D34xx
15	AuxPrinter5	1B6D35xx
16	AuxPrinter6	1B6D36xx

17	AuxPrinter7	1B6D37xx
18	AuxPrinter8	1B6D38xx
19	AuxPrinter9	1B6D39xx

Note that the printer selected by the GSMCONS.INI setting must be a non-mapped, local DOS Device. The printer is opened for exclusive use when GSMCONS.EXE starts up and is only closed, and thus made available to other applications, when GSMCONS.EXE closes.

The rules that govern the full-screen and wide-mode options of GLCONS.EXE also apply to GSMCONS.EXE:

Option	Win-95/98	Win-NT
80th column position available ($.730 etc.)	No	No
80th column position available ($.731 etc.)	Yes[1]	Yes
full screen mode supported	Yes	Yes
full screen at start-up possible	No	Yes
132 wide window supported ($.730 etc.)	No	No
132 wide window supported ($.731 etc.)	Yes	Yes
132 wide full screen supported	No	No

In the above "$.730" represents the family of TAP's that includes $.730, $.732 etc.; similarly "$.731" represents the family of TAP's that includes $.731, $.733 etc.

Note-1: The 80th character position on the bottom line is NOT write-able when an 80-column TAP is used on Windows-95 and 98.

GSMCONS.EXE detects an attempt to load a Global Windows Workstation TAP (e.g. $.711 or $.712). When an incompatible TAP is loaded the following warning dialogue box will be displayed:
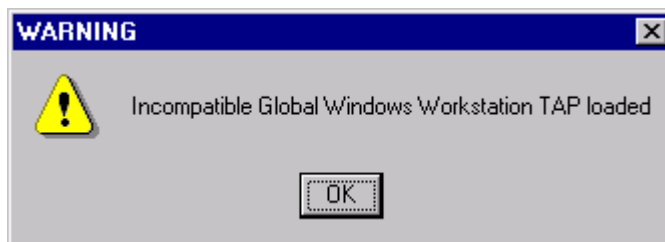
If this message appears run $E immediately to re-load the correct TAP (e.g. $.730 or $.731 etc.). Please refer to the GSM (Windows) Configuration Notes for further details regarding the correct TAP's to use with GSMWIN32.EXE and GSMCONS.EXE.

GSMCONS.EXE supports the following option in the [miscellaneous] section of the GSMCONS.INI file:

KeyboardTimeout

When this option is specified, GSMCONS.EXE, introduces a small delay to ensure that there is a small time difference between receiving and sending characters over a TCP/IP link. This option should not be enabled under normal circumstances;

- A bug in the $COMPRES SVC, SVC-80, has been fixed. This problem can cause a spurious WRITE FAIL error message to appear when uncompressing a file(s);

- GLOBAL.EXE now recognises the /Y command line option. When this option is enabled the registry key "AltServers" instead of the normal "Servers" key is used to obtain the connection information required to access the various servers;

- Diagnostics have been added to the $BYE handling to investigate a problem that can result in the Global Client hanging when $BYE is run. The diagnostics, which are enabled by the following registry setting:

    ..\Global\Client\Enable$BYEDiagnostics

 cause a log-file, *byediags.log*, to be created in the current directory;

- A new internal diagnostic option, SVC-90, has been included in GSM. This option is reserved for internal use only and is controlled by the following new settings in the registry:

    ..\Global\Client\Nucleus\SVC90FileName
    ..\Global\Client\Nucleus\SVC90Count
    ..\Global\Client\Nucleus\SVC90Length1
    ..\Global\Client\Nucleus\SVC90Length2
    ..\Global\Client\Nucleus\SVC90Length3
    ..\Global\Client\Nucleus\SVC90Length4
    ..\Global\Client\Nucleus\SVC90Length5
    ..\Global\Client\Nucleus\SVC90Length6
    ..\Global\Client\Nucleus\SVC90Length7
    ..\Global\Client\Nucleus\SVC90Padding

- The following registry setting is available to specify the "Data Type" of the document printed by the WinPrint controller:

    ..\Global\Client\Printers\WinPrint\5*nn*\StartDocDataType

    This option is reserved for future use;

- The following new options in the registry are reserved for future use:

..\Global\Servers\FileExecValidation
..\Global\Servers\x\FileExecValidation

- A diagnostic option has been added to the Printer Executive to dump all the current Printer Translation Tables to a dump file, *printdump.bin*. This option is reserved for diagnostic purposes only;

- It is now possible to override the customisations within the $MONITOR file by various settings in the following registry key:

  ..\Global\Client\Monitor

  These advanced settings, which are currently reserved for future use, are outside the scope of this document. However, a complete description of this option can be found in Technical Note In188;

- GLOBAL.EXE now recognises the following new registry settings:

  ..\Global\Client\Screens\GUI\Miscellaneous\TextSubstitutionFilenameValidation
  ..\Global\Client\Screens\GUI\Miscellaneous\MainFramePositionWide

  These options are reserved for specialised functions and should not be used.

GSM (Windows) BACNAT variant 2.9B

The V2.9B BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE:

- Both the V2.9 & V2.9A GLOBAL.EXE modules contain a bug that can result in a variety of symptoms when a particular coding technique in 16-bit Cobol or 16-bit Speedbase is used. The symptom of the problem is a TRAP AT 0000 or a fatal error 8 from the CCI.

  The coding technique within a Cobol program or Speedbase frame involves CALLing or PERFORMing the next sequential line of code. For example:

```
              PERFORM LABEL1          * PERFORM SOME ROUTINE
    LABEL1.                           * FALL THROUGH TO DO IT AGAIN !!!
              (some code)             * CODE IN BODY OF ROUTINE
              EXIT                    * EXIT FROM THE ROUTINE
```

  However, the problem will not occur every time such code is executed. It will only occur if a time-slice swap occurs between LABEL1, in this example, and the EXIT statement.

  The only example of this coding technique that we have found to date occurs in Sales Analysis.

However, all sites with the V2.9 or V2.9A GLOBAL.EXE are recommended to upgrade to V2.9B immediately.

GSM (Windows) BACNAT variant 2.9C

The V2.9C BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE:

- The V2.9C GLCONS.EXE client includes the fix to the problem described in section 5.10 (i.e. the problem described in section 5.10 was fixed in GLOBAL.EXE V2.9B and in GLCONS.EXE V2.9C);

- The problem that causes the GLOBAL.EXE Global client to ignore keyboard input, and appear to hang, if heavy displays are in progress has been fixed. This problem occurred in a variety of circumstances (e.g. when continual "in progress" messages are being displayed, during the Global Writer block delete dialogue).

GSM (Windows) BACNAT variant 2.9D

The V2.9D BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE and GSMCONS.EXE:

- A problem that resulted in a spurious "Error 123 from SetCurrentDirectory" when loading either GLOBAL.EXE or GLCONS.EXE, has been fixed. This problem, which is very dependent on the precise format of the command line argument, has only been reported in GLCONS.EXE although it could occur in GLOBAL.EXE;

- Both GLOBAL.EXE and GLCONS.EXE automatically create a "log" directory immediately under the current Global directory. A small log file, bootdiags.log, is automatically created each time the Global client is loaded;

- The GUI module with GLOBAL.EXE has been upgraded to fix a problem that causes a General Protection Error (i.e. a complete crash) when exiting from an End-User System Request.

GSM (Windows) BACNAT variant 2.9E

The V2.9E BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE, GLCONS.EXE and GLSERVER.EXE:

- An apparent problem in the $STATUS RES and CLR commands that leaves open files and outstanding locks on remote File Executives has been fixed. The solution to the problem involves each Global Client maintaining a "private" list of all the Global Servers that have been accessed. When a user on the Global Client is restarted, all the Global Servers that have been accessed by the client, based on the contents of the "private" list, are sent a Reset operation rather than the client relying on the (unreliable) SYLANF flag in the Global System Area. In V2.9E version of GLOBAL.EXE, this improved behaviour is enabled by the following registry setting:

..\Global\Client\IgnoreSYLANF

For the released V3.0 GLOBAL.EXE (see section 5.14, below) the "Ignore SYLANF" option is enabled by default so there should be no need to add this registry setting;

- Windows environment variables are now allowed in REG_SZ (i.e. string) registry values. An environment variable is indicated by enclosing the string in % characters. For example, if the Windows environment variable "GLOBALDIR" is set to "D:\PROGRAMS\GLOBAL" then setting a registry string value to "%GLOBALDIR%\GSM200" will result in the following string value:

    D:\PROGRAMS\GLOBAL\GSM200

If the string enclosed in "%" characters is not a valid environment variable the string, including the two % characters, is returned as the registry value.

Windows environment variables are recognised by GLOBAL.EXE, GLCONS.EXE and GLSERVER.EXE. Windows environment variables are NOT currently recognised by SPEEDBAS.EXE or SPEEDSQL.EXE.

Important note 1: The automatic expansion is not performed for free-format, variable-text keys but only for string-values.

Important note 2: Do not confuse Windows environment variables, enclosed in "%" characters with the experimental Global registry settings starting with the "%" character that are mentioned briefly in section 5.9 and Appendix G;

- A new option to allow the name of a target Speedbase Gateway to be specified as a registry Value (i.e. rather than as a free-format, variable-text registry Key) is now available. It is possible to specify the details of a Speedbase Gateway with the following registry settings:

    ..\Global\Client\Gateways*NN*\GatewayServerName
    ..\Global\Client\Gateways*NN*\ProtocolSequence
    ..\Global\Client\Gateways*NN*\NetworkAddress
    ..\Global\Client\Gateways*NN*\Endpoint
    ..\Global\Client\Gateways*NN*\Port   (reserved for future use)

The notional index number *NN* (between 01 and 99) is purely descriptive and merely serves to allow multiple Gateways to be defined in the registry.

Compare the original registry format:

    ..\Global\Client\Speedbase\Server1\ProtocolSequence = ncacn_ip_tcp

..\Global\Client\Speedbase\Server1\NetworkAddress = Server1
..\Global\Client\Speedbase\Server1\Endpoint = 3100

With the equivalent alternative format:

..\Global\Client\Gateways*NN*\GatewayServerName = Server1
..\Global\Client\Gateways*NN*\ProtocolSequence = ncacn_ip_tcp
..\Global\Client\Gateways*NN*\NetworkAddress = Server1
..\Global\Client\Gateways*NN*\Endpoint = 3100

Both the original and alternate registry settings are recognised by GLOBAL.EXE. However, when a connection to a Speedbase Gateway is requested, the various Client\Gateways\NN*GatewayServerName* settings are considered before the Client\Speedbase*GatewayServerName* settings.

Note that the new format allows the Speedbase server name to be specified as Windows Environment Variable (i.e. it is specified as a registry value rather than a registry key);

- The "gsmrpc" Client-Server interface, introduced with GLOBAL.EXE V2.8 (see section 5.8), has been enhanced to allow multiple clients to connect to a server using the "gsmrpc" option (the initial release only allowed single-client configurations). Several registry settings are required to enable the new multiple-client option.

  For the Global Client, the following registry setting must be enabled:

  ..\Global\Client\EnableMultipleGSMRPC = On

  For the Global server, the following registry settings must be enabled:

  ..\Global\Servers\EnableMultipleGSMRPC = On
  ..\Global\Servers\MultipleClientGSMRPC*NN=xx*

  where *NN* (or *N*) is a unique number and *xx* is the node-id of a local client. For example, to enable "gsmrpc" for Global clients 27,28 and 29:

  ..\Global\Servers\MultipleClientGSMRPC1=27
  ..\Global\Servers\MultipleClientGSMRPC2=28
  ..\Global\Servers\MultipleClientGSMRPC3=29

- The device name of the WinPrinter print device is included in all API Error Messages displayed by the controller. This new feature should allow typo's in the Name setting to be detected more readily;

- The WinPrint controller has been enhanced to allow the name of the Windows print device for a particular printer number to be optionally modified according to the Screen Number. Thus, the following registry settings:

  ..\Global\Client\Printers\WinPrint\5*nn*\NameForScreen*N*
  ..\Global\Client\Printers\WinPrint\5*nn*\NameForScreen*NN*

  overrides the normal "Name" setting for screen *N* or *NN* (*N* = 1 to 9; *NN* = 10 to 99):

  Similarly, the following registry setting:

  ..\Global\Client\Printers\WinPrint\5*nn*\NameForNode*NN*

  overrides the normal "Name" setting for node-id *NN* (*NN* = 27 to 99). This setting is only recognised if the /EN command line argument has been used to override the default node-id.

  In order for the override to be effective, the "Name" option must be set to a real printer (i.e. it must not be <blank> and the "DisableValidation" option **MUST** be disabled.

  Note that screen numbers between 1 and 9 require registry settings "NameForScreen1" to "NameForScreen9" (i.e. rather than the normalised "NameForScreen01" to "NameForScreen09").

- An SVC-61 operation is available to return the Windows printer device for a particular Printer Number/Screen Number combination. A further SVC-61 operation returns details of the $MonitorOverride option. Details of these specialised operations are beyond the scope of these notes.

- The following new diagnostic option has been added to the WinPrint printer controller:

  ..\Global\Client\Printers\WinPrint\5*nn*\WinPrintDiagnostics

  When this option is enabled, the file " WinPrintDiags*NNN*.log" (where *NNN* is the printer number is created in the "log" directory. Note also that this registry setting has been moved for the V3.0 release (see section 5.13, below);

- More options have been added to the WinPrint printer controller. The following option ignores any errors that may be generated by the StartPagePrinter function:

  ..\Global\Client\Printers\WinPrint\5*nn*\IgnoreStartPageError

  If this option is disabled any errors from the StartPagePrinter function will result in an ERROR H on the printer.

The following option causes the WinPrint controller to avoid both the StartPagePrinter and EndPagePrinter function calls:

..\Global\Client\Printers\WinPrint\5*nn*\SkipStartPageCall

In addition, the following option causes the WinPrint controller to issue a StartPagePrinter function call after every Form-Feed character:

..\Global\Client\Printers\WinPrint\5*nn*\StartPageAfterFormFeed

● The DOSPrint controller now includes the option to operate in Polled mode. This option is enabled by setting the following registry value to "on":

..\Global\Client\Printers\DOSPrint\5*nn*\PolledMode

The poll rate is controlled by the following setting:

..\Global\Client\Printers\DOSPrint\5*nn*\PrintPollDivisor

● The DOSPrint controller now includes a number of highly specialised settings.

The following option removes trailing <CR> characters from the output print file, for use with specialised data exports:

..\Global\Client\Printers\DOSPrint\5*nn*\RemoveCR

The following option removes trailing Form-Feed characters from the output print file. This option effectively removes hard page-breaks from the print file:

..\Global\Client\Printers\DOSPrint\5*nn*\RemoveFF

The following option enables the Tab Contraction/compression function:

..\Global\Client\Printers\DOSPrint\5*nn*\TabContract

The following option allows the default Tab Stop number to be changed from the default value of 8:

..\Global\Client\Printers\DOSPrint\5*nn*\TabPosition

All the above options have been added for specialised data export scenarios and should be used with extreme caution;

● The following new $AUXPRI Screen Type values are supported:

Screen Type value	*Printer Selected in GSMCONS.INI*	*Escape sequence*
20	AuxPrinter0	1B6F30
21	AuxPrinter1	1B6F31
22	AuxPrinter2	1B6F32
23	AuxPrinter3	1B6F33
24	AuxPrinter4	1B6F34
25	AuxPrinter5	1B6F35
26	AuxPrinter6	1B6F36
27	AuxPrinter7	1B6F37
28	AuxPrinter8	1B6F38
29	AuxPrinter9	1B6F39
30	AuxiliaryPrinter	1B6F40

These new escape sequences are followed by variable length print strings (which are terminated by the escape sequence 1B5B3469). Note that these new escape sequences are only supported by GSMCONS.EXE (i.e. they are not currently supported by GSMWIN32.EXE);

- The $AUXPRINT controller now recognises ScreenType values higher than 100. A ScreenType value higher than 100 indicates that a Close Printer escape sequence must be sent to the terminal emulator for every Close Printer operation. When a ScreenType value higher than 100 is configured, 100 is subtracted from the value to obtain the "true" ScreenType value. For example, a ScreenType set to 105 indicates a ScreenType of 5 but with the Close Printer option enabled;

  Important note: At the time of writing the Close Printer escape sequence is only supported on the V3.0 GSMCONS.EXE. This option is NOT supported in any version of GSMWIN32.EXE.

- The number of Printer Translations supported by the Printer Executive has been extended from 32 to 64 as required by the extensions to the V8.1I $CUS utility (see section 2.10);

- The size of an internal Console Executive intermediate output buffer has been increased from 8 to 128 characters. This will increase display performance under some circumstances;

- The SVC-61 interface has been enhanced to provide a family of functions that provide full access to the Windows access to the Windows registry. The following functions are supported:

  Test for registry value
  Delete registry value
  Test for registry key

Add new registry key
Delete registry key
Get registry DWORK value
Get registry REG_SZ value
Set registry DWORK value
Set registry REG_SZ value
Add registry DWORK value
Add registry REG_SZ value

For further details, please refer to the draft V8.2 File Converters Manual, which is available upon request;

- The SVC-61 interface has been enhanced to return the string value associated with a Windows Environment variable. For further details please refer to the draft V8.2 File Converters Manual, which is available upon request;

- GLSERVER now recognises the setting of the DiagnosticDisplays flag under all circumstances. The problem that resulted in the API Error message Box appearing when some errors occurred, regardless of the DiagnosticDisplays setting, has been fixed. The default value for the DiagnosticDisplays flag is "Off";

- By default, the various $MONITOR override values in the "Monitor" key do not attempt to override the $MONITOR from a Starter System (i.e. from a BACRES). However, under some circumstances it may be necessary to override a Starter System. The following new value has been added to the "Monitor" key:

  ..\Global\Client\Monitor\StarterSystemOverride

- The following registry settings changes the Printer Control File (PCF) naming convention:

  ..\Global\Client\Nucleus\CentralPCFName

If this option is enabled, the Global Client node-id is ignored when building the name of the Printer Control File (PCF), regardless of the Printer Unit Number. That is, the PCF name is always $$P5nn, for all printers.

- The SVC-86 interface to GX has been enhanced to support fast, asynchronous GX operations. A problem in this area, that prevented the DOSPrint controller "PostCloseProgramName" option from functioning correctly, has been fixed;

- The SVC-61 interface maintains a table of the Windows files that have been opened by Global applications. When a Global application terminates, any Windows files that remain open are automatically closed by the "Reset" handling. This new functionality avoids the problem that can occur when a Global application opens a Windows file but

does not close it cleanly (without the new option the Windows file would remain open until the Global client is restarted).

- The following registry setting can be used to alter the TCP/IP packet buffering:

    ..\Global\Client\Screens\Network\WinSockSendBufferSize

    This option can be used to change the buffer size from any value between 256 bytes and 64Kb (the default is normally 8Kb). Note that changing this parameter is not generally recommended.

- The Printer Executive time-out value is automatically multiplied by a factor of 10 for $AUXPRI printers. This is necessary to overcome a problem that results in spurious NOT READY errors with $AUXPRI printers when large TCP/IP buffers are configured;

- SVC-80 has been enhanced to support the functionality required by the "chained sub-volume" option. This option is enabled by setting the #08 bit of the NUMBER OF EXTRA ASSIG$ TABLES prompt in the NUCLEUS SECTION of the Global configuration file. Note that this obscure enabling technique has been superceded by a more obvious registry setting (i.e. +EnableUnitMapping) when the option to avoid the Configuration File has been enabled (see Appendix G);

- The Global Client now includes support for SVC-91. A description of this SVC, which provides access to an Extended 16-bit System Area, is beyond the scope of these notes. The following registry setting allows the Extended System Area to be increased from the default size of 0 bytes:

    ..\Global\Client\Nucleus\ExtendedSystemAreaSize

    Important Note: Previous versions of this document incorrectly stated that the default ExtendedSystemAreaSize is 256 bytes.

- The following new diagnostic option has been added to track the allocation and de-allocation of memory by GLOBAL.EXE:

    ..\Global\Client\EnableAllocMemoryDiagnostics

    When this option is enabled, the file "allocmemdiags.log" is created in the "log" directory. Note also that this registry setting has been moved for the V3.0 release (see section 5.14, below);

- Internal changes to GLOBAL.EXE, GLCONS.EXE and GLSERVER.EXE to support the full range of File Executive operation codes, including a new Speedbase exclusive lock operation, have been implemented;

- A new option in GLSERVER.EXE allows the creation of a log-file containing all the messages that normally appear in the Global Server window. The name of the Global Server log-file is GLSERVERx.LOG (where x is the server letter). This option is enabled by setting the following registry option:

  ..\Global\Servers\EnableServerLogFile

  Note that the default for this option is "on" (i.e. Server log files are created by default). Note also that this registry setting has been moved for the V3.0 release (see section 5.14, below);

- The Diagnostic "FD Logging" option in GLSERVER.EXE is now correctly recognised when the "gsmrpc" interface is used;

- The default 5 second timeout in GLOBAL.EXE when waiting for a response from a GLSERVER.EXE via the "gsmrpc" interface is now configurable. The following setting allows this timeout period to be modified from the default of 5 seconds:

  ..\Global\Client\GSMRPCTimeout

The V2.9E BACNAT repackaging for Global System Manager (Windows) also includes the following features in GSMCONS.EXE:

- An option to display "bright" colours (e.g. true yellow, rather than a dirty brown) is now supported in GSMCONS.EXE. A new [colours] section in the GSMCONS.INI file can include the following new settings:

  BrightYellow
  BrightWhite
  BrightGreen
  BrightBlue
  BrightRed
  BrightMagenta
  BrightCyan

- The following new settings have been added to the [miscellaneous] section of the GSMCONS.INI file:

  SendInitialEscape   This option can be used to force the display of a sign-on screen by sending an <ESC> character when GSMCONS.EXE is initiated. This is typically required when GSMCONS.EXE is used to reconnect to a session that has been terminated by the use of $E;

ConsoleTitlePrefix   This setting allows a string of up to 40 characters to replace the default caption text of "Global Thin Client";

LogDisplays=On   This option has been added to log all displays in a log-file "gsmconslog.bin".

Important Note: In the V3.0 GSMCONS.EXE (see section 5.14, below) the the LogDisplays option has been moved to [diagnostics] section of the GSMCONS.INI file;

- The following new settings have been added to the [tcpipparameters] section of the GSMCONS.INI file:

WinSockReceiveBufferSize   This option allows the size of the TCP/IP receive buffers to be modified. By default, if this option is absent, the buffer size is 8Kb. This option may be used to set the buffer size to any value between 256 bytes and 64Kb.

NoDelay   This setting optimises the transfer of small TCP/IP packets and may improve performance under some conditions.

- GSMCONS.EXE now supports the variable length "PCWS" format Auxiliary printer escape sequences in addition to the "Global Windows Workstation" format sequences described in section 5.9. The following new escape sequences are supported:

ScreenType value	Printer in GSMCONS.INI	On Seq.	Off seq.
30	AuxiliaryPrinter	1B 6F 40	1B 5B 34 69
20	AuxPrinter0	1B 6F 30	1B 5B 34 69
21	AuxPrinter1	1B 6F 31	1B 5B 34 69
22	AuxPrinter2	1B 6F 32	1B 5B 34 69
23	AuxPrinter3	1B 6F 33	1B 5B 34 69
24	AuxPrinter4	1B 6F 34	1B 5B 34 69
25	AuxPrinter5	1B 6F 35	1B 5B 34 69
26	AuxPrinter6	1B 6F 36	1B 5B 34 69
27	AuxPrinter7	1B 6F 37	1B 5B 34 69
28	AuxPrinter8	1B 6F 38	1B 5B 34 69
29	AuxPrinter9	1B 6F 39	1B 5B 34 69

Note-1: Simultaneous printing, using 2 different "variable length" auxiliary printer escape sequences will result in data corruption.

Note-2: For all types of auxiliary printer escape sequences, if the Device Name defined in the GSMCONS.INI file start with a "\" character, to specify a filename, all printer date will be written to file. For example:

AuxiliaryPrinter=\temp\auxprint.txt

GSMCONS.EXE now supports the following new setting in the [printers] section of the GSMCONS. INI file:

AuxPrinterBuffering

When this option is enabled characters for the auxiliary printer are blocked until the auxiliary printer off escape sequence has been received. Note that the printer buffer is flushed to the Print Device when it becomes full to allow for those applications that send an entire report etc. before sending the Auxiliary printing "Off" escape sequence.

The Windows API call (CreateFile) that is used to open the printer device specified by the AuxiliaryPrinter, AuxPrinter0, AuxPrinter1 ,…, AuxPrinter9 settings fails if the printer is a captured network printer (e.g. LPT2:= \\globalnt1\tisljb). A second set of GSMCONS.INI file settings are now available to specify an auxiliary printer device that is a captured network printer:

NetworkPrinter
NetPrinter*N*   (*N*=0 TO 9)

These devices are opened using the OpenFile API call so the ":" character on the end of the device name is not required. For example:

AuxiliaryPrinter=LPT1:
NetworkPrinter=LPT1
AuxPrinter1=LPT2:
NetPrinter2=LPT2

Important Note: The absence of the ":" character in the device name specified for the NetworkPrinter and NetPrinter*N* settings is deliberate. The ":" character is required for the local DOS printers specified for the AuxiliaryPrinter and AuxPrinter*N* settings. The ":" characters is **NOT** required for captured network printers specified for the NetworkPrinter and NetPrinter*N* settings.

The NetworkPrinter and AuxiliaryPrinter settings are mutually exclusive, as are the NetPrinter*N* and AuxPrinter*N* (for any given *N*). This restriction is necessary because the same escape sequences are used to redirect output to the AuxiliaryPrinter and NetworkPrinter devices; and the AuxPrinter*N* and NetPrinter*N* devices.

- The GSMCONS.EXE Auxiliary Printer handling supports the Close Printer sequence sent by the host when the ScreenType option in the registry is set to 105 (see above).

This option may be necessary to flush the data to a network printer (i.e. rather than waiting for GSMCONS.EXE to be closed).

Important Note: This option only applies to the primary NetworkPrinter and AuxiliaryPrinter devices. IT CANNOT BE USED WITH ANY OF THE secondary AuxPrinter*N* OR NetPrinter*N* devices.

GSM (Windows) BACNAT variant 3.0

The V3.0 BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE, GLSERVER.EXE and GLCONS.EXE:

● The current Production versions of the various Global System Manager (Windows) components are:

Module	Variant
Module	*Variant*
GLOBAL.EXE	V3.0/V3.0
GLSERVER.EXE	V3.0
GLCONS.EXE	V3.0/V3.0
GSMCONS.EXE	V3.0
SPEEDBAS.EXE	V1.78
SPEEDSQL.EXE	V1.78

Important note: The changes and new features included in SPEEDBAS.EXE and SPEEDSQL.EXE V1.78 are documented in section D.13 of the GSM V8.1 Notes;

• The various changes described below have resulted in a vast proliferation of registry options. A document (GLMACH.DOC) describing all the Global registry options is being prepared. This document will be available on the Global web-site;

● The option to load a Global Client without accessing the Global Configuration File is now available. This option is enabled by setting the following registry option to "Off":

..\Global\Client\UseConfigurationFile

When this option is enabled all the Global Client configuration options are established via the registry. Please refer to Appendix G for further details.

To provide compatibility with installed systems the default value of this setting is "On";

Important note: The option to ignore the configuration file **MUST** be disabled when installing Global System Manager (i.e. the UseConfigurationFile setting must be set to "On" when loading from BACRES).

● The option to load a Global Server without accessing the Global Configuration File is now available. This option is enabled by setting either of the following registry options to "Off":

    ..\Global\Servers\x\UseConfigurationFile   (a)
    ..\Global\Servers\UseConfigurationFile   (b)

When this option is enabled all the Global Server configuration options are established via the registry. Please refer to Appendix G for further details. As explained in Appendix G, the server-specific option (b) takes precedence over the generic-server option (a) for a given Global Server.

To provide compatibility with installed systems the default values of both of these settings is "On";

● If the option to by-pass the Global Configuration File has been enabled for a Global Server (i.e. if the UseConfigurationFile setting is "Off") then no attempt is made to read from the GL-%-IPL.DLV file. Consequently, this IPL file is not required if the UseConfigurationFile setting is "Off";

● The lock table handling has been significantly enhanced to maintain a list of those users associated with Shared Locks. Central to the implementation of the improved Lock Table handling is the "Shared Lock Table". The following registry settings allow the size of the Shared Lock Table to be specified:

    ..\Global\Servers\x\+NumberOfSharedLockTableEntries   (a)
    ..\Global\Servers\+NumberOfSharedLockTableEntries   (b)
    ..\Global\Client\Nucleus\+NumberOfSharedLockTableEntries   (c)

The first setting (a) specifies the size of the Shared Lock Table for a particular server *x* (e.g. A, B etc.). The second setting (b) specifies the size of the Shared Lock Table for all servers that are not specified explicitly by a type (a) setting. The third setting (c) specifies the size of the Shared Lock Table for the local Global Client File Executive (i.e. when a GLOBAL.EXE or GLCONS.EXE is configured with a local DDF). The default number of Shared Lock Table entries is 2000. The Extended Shared Lock handling can be disabled by setting this value to 0.

In addition to the "server side" +NumberOfSharedLockTableEntries registry settings described above, the following "client side" registry setting (i.e. for GLOBAL.EXE and GLCONS.EXE) must be enabled to use the new $STATUS "LKE" (Extended Lock) command (as described in section 2.10):

    ..\Global\Client\Nucleus\ExtendedSharedLocks

If the "client side" option (i.e. ExtendedSharedLocks) is enabled but the "server side" option (i.e. +NumberOfLockTableEntries=0) is disabled, a variety of problems,

including persistent "ERROR O" messages when attempting the $STATUS "LOC" or "LKE" commands will occur. This should not represent a problem if all the Global components on a network (i.e. GLOBAL.EXE, GLCONS.EXE and GLSERVER.EXE) are V3.0. **However, a problem will occur if a V3.0 GLOBAL.EXE (or GLCONS.EXE) attempts to access a pre-V3.0 GLSERVER.EXE**. If the GLSERVER.EXE cannot be upgraded to V3.0 (i.e. to enable the "server side" +NumberOfSharedLockTableEntries option) then the "client side" ExtendedSharedLocks option MUST be disabled to prevent the Global Client making calls on the Global Server that are not available.

A complete description of these changes can be found in Technical Note IN194;

- The Global Server, GLSERVER.EXE, has been considerably improved to allow automatic File Executive resets (to close files and release exclusive locks and shared locks) when a Global Client disconnects, reconnects and/or connects for the first time. The following new registry settings control these options:

      ..\Global\Servers\x\FileExecResetOnConnection
            (a)
      ..\Global\Servers\x\FileExecResetOnReconnection   (b)
      ..\Global\Servers\x\FileExecResetOnDisconnection   (c)
      ..\Global\Servers\FileExecResetOnConnection   (d)
      ..\Global\Servers\FileExecResetOnReconnection
            (e)
      ..\Global\Servers\FileExecResetOnDisconnection   (f)

  The first group of three settings (a), (b) and (c) enable one of the automatic reset options for a particular server x (e.g. A, B etc.). The second group of three settings (d), (e) and (f) enable one of the automatic reset options for all servers that are not specified explicitly by the equivalent "single server" setting.

  A complete description of these changes can be found in Technical Note IN194;

- The NETWORK controller has been enhanced to accept the Global Windows Workstation Identifier String (GIS) from the V3.0 Global Windows Workstation (see section A.3.17 of the V3.0 Global Windows Workstation Notes for full details). This option, which is enabled by default, is controlled by the following registry setting:

      ..\Global\Client\Screens\Network\AllowGUIReconnect

  The default for this option is "On" for compatibility with the V3.0 Global Windows Workstation.

  Important note-1: This option should be disabled if the thin-client emulator is either a pre-V3.0 version of GSMWIN32.EXE or any version of GSMCONS.EXE.

Important note-2: The command line /Z option that was used to enable this option in pre-release versions of GLOBAL.EXE has been removed from the V3.0 GLOBAL.EXE;

- A new Console Executive operation has been implemented to return the TCP/IP address in "dotted decimal" format (e.g. 192.168.1.234) of the computer running GSMWIN32.EXE in a thin client configuration. This option is only available if the "AllowGUIReconnect" option (see above) has been enabled;

- Several resellers have pointed out that the various diagnostics options in the Global registry are very difficult to locate. Consequently, it is very difficult to determine the diagnostics options that are currently enabled. This problem has been addressed by changing the format of the Global registry to include most of the diagnostics settings in a small number of registry keys. For V3.0, the complete list of diagnostic settings, all of which are disabled by default, is:

```
..\Global\Client\Diagnostics\DiagnosticDisplays
..\Global\Client\Diagnostics\LogConfigurationSynthesis
..\Global\Client\Diagnostics\Enable$BYEDiagnostics
..\Global\Client\Diagnostics\EnableAllocMemoryDiagnostics
..\Global\Client\Diagnostics\FileExecDiagnostics
..\Global\Client\Diagnostics\LogNetworkConnections
..\Global\Client\Diagnostics\SVC79Diagnostics
..\Global\Client\Diagnostics\SVC79DiagLevel
..\Global\Client\Diagnostics\LogExceptionLevel
..\Global\Client\Diagnostics\ConsoleDiagnostics
..\Global\Client\Diagnostics\ConsoleLogging.
..\Global\Client\Diagnostics\LogKeystrokes
..\Global\Client\Diagnostics\SVC86Diagnostics
..\Global\Client\Diagnostics\SVC90FileName
..\Global\Client\Diagnostics\SVC90Count
..\Global\Client\Diagnostics\SVC90LengthN
..\Global\Client\Diagnostics\SVC90Padding
..\Global\Client\Diagnostics\SVC61Diagnostics
..\Global\Client\Diagnostics\SVC61DiagUserNumber
..\Global\Client\Diagnostics\SVC61DiagShortOpcode
..\Global\Client\Diagnostics\SVC61SpeedbaseDiagnostics
..\Global\Client\Diagnostics\SVC61SpeedbaseDiagUserNumber
..\Global\Client\Printers\DOSPrint\5nn\Diagnostics\PostCloseDiagnostics
..\Global\Client\Printers\WinPrint\5nn\Diagnostics\WinPrintDiagnostics
..\Global\Client\Screens\GLCONS\Diagnostics\InputCharacterDiagnostics
..\Global\Client\Screens\Network\nn\Diagnostics\LogIACSequences
..\Global\Server\Diagnostics\EnableServerLogFile
..\Global\Server\x\Diagnostics\EnableServerLogFile
..\Global\Server\Diagnostics\FileExecDiagnostics
..\Global\Server\x\Diagnostics\FileExecDiagnostics
..\Global\Server\Diagnostics\LogConfigurationSynthesis
```

..\Global\Server\x\Diagnostics\LogConfigurationSynthesis
..\Global\Server\Diagnostics\DiagnosticDisplays
..\Global\Server\x\Diagnostics\DiagnosticDisplays

The only diagnostics options that are not directly under a "Diagnostics" key are:

..\Global\Speedbase\DiagnosticDisplays
..\Global\Speedbase\DiagnosticLogfile
..\Global\Speedbase\LogFileFolder
..\Global\Speedbase\SpeedbaseLogFileFolder
..\Global\Client\Screens\GUI\Miscellaneous\LogDisplays
..\Global\Client\Screens\GUI\Miscellaneous\LogKeystrokes

See document GLMACH.DOC (when available) for further details;

● The various diagnostic options that create log files have been rationalised. All, except one, of the log files created by GLOBAL.EXE, GLCONS.EXE and GLSERVER.EXE are written to a "log" directory immediately under the "Global directory". For example, if the following option is enabled (see section 5.9):

..\Global\Client\Diagnostics\Enable$BYEDiagnostics

the V2.9 GLOBAL.EXE will create a log-file, *byediags.log*, in the current directory (e.g. D:\GSMNT), whereas the V3.0 GLOBAL.EXE will create the log file in D:\GSMNT\LOG. This allows all the Global generated log-files to be deleted by simply clearing a single Windows directory.

The only exception to this rule is the *fontsize.txt* file that is created by the Global Windows Workstation (GUI) components within GLOBAL.EXE. For compatibility with GSMWIN32.EXE, this "font size description file" is created in the current directory.

Although most log-files are generated by the explicit setting of a registry option (e.g. Enable$BYEDiagnostics) a small number of tiny log files are generated, in the log-directory, automatically. There is no way to suppress the creation of the following log-files:

..\log\bootdiags.log
..\log\gsminfo.txt
..\log\gsminfo.bin

● The "full screen" Global Client, GLCONS.EXE, has been enhanced to trap an attempt to close the application by clicking on the Close Box. If an attempt is made to close the Global Client, without running $BYE, the familiar Windows "End Task" dialogue box will appear;

- The message sent to the thin-client by the NETWORK controller when no more ports are available has been changed from:

  No more screens available on port NN

  to the slightly more descriptive:

  No more free connections (screens) available on port NN

- The following new registry setting is now available:

  ..\Global\Client\Screens\Network\DefaultTerminalType

  This setting can be used to supply a default Terminal Type for all Network screen controllers that don't include the following explicit "screen specific" registry setting:

  ..\Global\Client\Screens\Network\NN\TerminalType

  A single generic "all screens" DefaultTerminalType setting can be used instead of multiple "screen specific" TerminalType registry settings (i.e. one for each NN).

- The default value of the following registry setting:

  ..\Global\Client\IgnoreSYLANF

  is now "On". See section 5.13 for further details.

- In order to prevent possible Windows NT "thrashing" problems, the Global Server Initiation/Start process, GLSSTART.EXE, delays for 1 second between each GLSERVER.EXE that is started. This option is controlled by the new /D command line setting. For example:

GLSSTART /ALL /D=1	Delay for 1 second (default)
GLSSTART /ALL /D=5	Delay for 5 seconds
GLSSTART /ALL /D=0	No delay (i.e. to pre-V3.0 mode)

- The message displayed by the "Network" screen controller when no more free connections are available on a given port has been enhanced to include the User Number in addition to the (less useful) Console Index number. In addition, a 1 second delay has been added between sending this message and closing the connection, to allow the brief message to be read on the Global Windows Workstation screen;

- The SVC-61 interface has been enhanced to allow access to Windows shared memory-mapped files. For further details, please refer to the draft V8.2 File Converters Manual, which is available upon request;

- The SVC-61 interface has been enhanced to allow the Global client to function as a Windows Mailshot server. For further details, please refer to the draft V8.2 File Converters Manual, which is available upon request;

- The SVC-61 interface has been enhanced to allow the Global client to function as a Windows Mailshot client. For further details, please refer to the draft V8.2 File Converters Manual, which is available upon request;

- An internal change to the logic that controls the Windows files opened and closed by SVC-61 has been implemented. Any number of open file handles can now be accommodated. A new SVC-61 operation is available to determine the number of open file handles;

- The "bright colours" handling implemented in GSMCONS.EXE (see section 5.13, above) has been ported to GLCONS.EXE. The following new registry options are available:

  ..\Global\Client\Screens\GUI\GLCONS\Colour\BrightYellow
  ..\Global\Client\Screens\GUI\GLCONS\Colour\BrightWhite
  ..\Global\Client\Screens\GUI\GLCONS\Colour\BrightGreen
  ..\Global\Client\Screens\GUI\GLCONS\Colour\BrightBlue
  ..\Global\Client\Screens\GUI\GLCONS\Colour\BrightRed
  ..\Global\Client\Screens\GUI\GLCONS\Colour\BrightMagenta
  ..\Global\Client\Screens\GUI\GLCONS\Colour\BrightCyan

- A new file-name mapping option within the program loader is now available. This option allows a program name (e.g. $I) to alias another (e.g. $INSPECT). The mapping is controlled by matching pairs of options in the new FileNameMapping section of the registry:

  ..\Global\Client\FileNameMapping\FileNameMappingFrom*NN*
  ..\Global\Client\FileNameMapping\FileNameMappingTo*NN*

  (where *NN* = 1 to 99). For example, to map a file-name of $I to $INSPECT; and $SDL to $SDL32:

  ..\Global\Client\FileNameMapping\FileNameMappingFrom1=$I
  ..\Global\Client\FileNameMapping\FileNameMappingTo1=$INSPECT
  ..\Global\Client\FileNameMapping\FileNameMappingFrom2=$$SDL
  ..\Global\Client\FileNameMapping\FileNameMappingTo2=$SDL32

- The $AUXPRI controller now allows up to 8 Auxiliary printers to be configured on a single ConsoleNumber. This is achieved by configuring all but the first $AUXPRI for a given Console with an "AuxPrintPriority" setting:

  ..\Global\Client\Printers\AuxPrint\5*nn*\AuxPrintPriority

The AuxPrintPriority setting must be in the range 1 to 7 (i.e. a priority of 0 is assumed for the first printer on a given ConsoleNumber).

The pre-V3.0 $AUXPRI controller ensures the ConsoleNumber is unique for all the configured $AUXPRI printers. The V3.0 $AUXPRI controller allows up to 8 $AUXPRI printers to share the same ConsoleNumber. However, both the AuxPrintPriority and the ScreenType options must be unique for a given ConsoleNumber.

Important note: The terminal emulator MUST support multiple Auxiliary printers. At the time of writing, only the V3.0 GSMCONS.EXE supports multiple Auxiliary printers (see below).

Furthermore, up to 8 "floating" Auxiliary printers can be configured per screen. Each "floating" printer is set to the "real" Auxiliary printer with the same AuxPrintPriority setting;

An example should make this clear:

Unit	ConsoleNumber	AuxPrintPriority	ScreenType
500	2	0	10
501	2	1	11
502	2	2	12
503	2	3	13
504	3	0	10
505	3	1	11
506	3	2	12
507	3	3	13
590	0	0	
591	0	1	
592	0	2	
593	0	3	

The "floating" printer 590 is mapped to printer unit 500 on the screen with a ConsoleNumber of 2 and to 504 on the screen with a ConsoleNumber of 3. The "floating" printer 591 is mapped to printer unit 501 on the screen with a ConsoleNumber of 2 and to 505 on the screen with a ConsoleNumber of 3. The "floating" printer 592 is mapped to printer unit 502 on the screen with a ConsoleNumber of 2 and to 506 on the screen with a ConsoleNumber of 3. The "floating" printer 593 is mapped to printer unit 503 on the screen with a ConsoleNumber of 2 and to 507 on the screen with a ConsoleNumber of 3;

- The SVC-12 interface has been enhanced to support the extra functionality required by the $SRCH32 utility;

- The $BYE handling in the Network controller has been improved. The following new registry setting has been added to allow the $BYE handling to continue if a Network connection cannot be reset successfully:

    ..\Global\Client\Screens\Network\Enable$BYEWatchdog

Enabling this option can **sometimes** cure the $BYE hanging problem.

- The following registry setting is reserved for future use to log all the network connections:

    ..\Global\Client\Diagnostics\LogNetworkConnections

- The Console Executive has been enhanced to support the new operation required by the CLRTA$ sub-routine;

- The Interpreter has been modified to return an Exception Condition 2 (rather than Exception Condition 8) when a 16-bit Monitor Page entry point is unavailable. This should result in the unique ILLEGAL PAGE debug message rather than the ubiquitous ILLEGAL JUMP debug message;

- The 8-bit character set handling of GSMCONS.EXE (see below) has been ported to GLCONS.EXE. The following options have been added:

    ..\Global\Client\Screens\GUI\GLCONS\Miscellaneous\Enable8BitMode
    ..\Global\Client\Screens\GUI\GLCONS\ISOTranslations\ToISOChar*NNN*

where *NNN* is a decimal number between 128 and 255.

Important Note: The ToISOChar*NNN* value-name in the registry that is recognised by GLCONS.EXE includes a decimal number in the key-word; whereas the ToISOChar*HH* key-word in the GSMCONS.INI file that is recognised by GSMCONS.EXE includes a hexadecimal number in the key name. However, both types of option expect a string in the form #*HH*, where *HH* is a hexadecimal number ;

- GLCONS.EXE also recognises the following new registry options:

    ..\Global\Client\Screens\GUI\GLCONS\Miscellaneous\CursorSize

This new setting overrides the original (slightly misplaced) setting:

    ..\Global\Client\Screens\GUI\CursorSize

- The V3.0 Global Windows Workstation Network controller includes an option to keep an internet connection "alive". This is achieved by periodically sending a special

character sequence #1E20 to the host. The Network controller has been modified to soak-up these "Keep Alive" characters;

• The handling of the following options:

    ..\Global\Servers\FileExecValidation
    ..\Global\Servers\x\FileExecValidation

has been rationalised to be compatible with the other dual "server specific" and "generic server" settings. That is, if a "server specific" option is not in the registry then the "generic server" setting used;

• The specialised SVC-90 interface has been extended to include DMAM and Shared Lock diagnostics if the SVC90Number is set to 16;

• Notwithstanding the major changes to the Shared Lock handling described above, a new, diagnostic option has been implemented to maintain a list of all the users associated with a particular shared lock. This option has been added to investigate a Hotline problem and should never be enabled under normal circumstances. The new options are:

    ..\Global\Servers\KeepSharedLocknodes
    ..\Global\Servers\x\KeepSharedLockNodes

• The Diagnostics entry on the Global Server (GLSERVER.EXE) menu bar now includes a "Dump Control Blocks" option. Each time this option is selected the File Executive creates a log-file called FileExecDump%.txt (where % is the server letter "A" to "Z"). Do not select this option unless explicitly advised to do so;

• The error reported when a read-only .SVL file is encountered has been changed from a SOFTWARE PROTECTION ERROR to a WRITE PROTECT ERROR;

• A highly specialised option is now available to trace problems with 32-bit applications:

    ..\Global\Client\Diagnostics\LogExceptionLevel

If this value is set to 1 a single-line record is written to the Exception.log file whenever an exception occurs. Note that a single Exception.log file is created by the Global Client. If this value is set to 3 two very large Exception Dump Files are created whenever any non-suppressed exceptions occur. The names of the Exception Dump Files are exedump_*NN_UUU*.log and exedump_*NN_UUU*.bin (where *NN* is the node-id and *UUU* is the User Number. The format of these dump files is beyond the scope of these notes. All other values are reserved for future use.

• The 32-bit interpreter has been enhanced to recognise the following new diagnostics options:

..\Global\Client\Diagnostics\LogHardResumeErrors
..\Global\Client\Diagnostics\LogSoftResumeErrors
..\Global\Client\Diagnostics\LogStackUnderOverFlow

Do not enable these options unless explicitly advised to do so;

- The Console Executive has been enhanced to support the "Get Current Buffer Lengths" option required by the highly-specialised 32-bit "Open TFAM via Global Windows Workstation" Access Method;

- The LAN Executive and File Executive have been enhanced to support the 32-bit ULOCK$ sub-routine. This sub-routine performs a "partial reset" by removing locks on all Global Servers that have been accessed by the user who is invoking the ULOCK$ call;

- A new diagnostics option, FileExecDiagnostics, has been added to both the Global Server and the Global Client. This option, which generates a very large log-file, is reserved for internal use only. Note that the "server specific" setting:

  ..\Global\Server\x\Diagnostics\FileExecDiagnostics

  is used in preference to the "generic server" setting:

  ..\Global\Server\Diagnostics\FileExecDiagnostics

- The "FD Logging" option on the Global Server Diagnostics menu is now correctly ticked when the option is enabled;

- The following registry option is available to alter the manner in which the Global client allocates and de-allocates memory. Enabling this option **may** prevent the hang that can occur when GLOBAL.EXE terminates following $BYE:

  ..\Global\Client\AvoidMemoryTracking

- It has been recognised that a Windows "thread-switch thrashing" problem can occur when a Cobol or Speedbase application program performs continuous displays to the "GUI" console controller. This thrashing problem gives the appearance that GLOBAL.EXE has hung. For the V3.0 GLOBAL.EXE we have changed the manner in which display operations to the "GUI" controller are initiated. The new Initiate Display function, included in the V3.0 GLOBAL.EXE, involves one process thread sending another process thread an immediate message. However, we have discovered that this improved Initiate Display processing can actually degrade the performance of display operations to the "GUI" console on some laptop PC's (and *potentially* some desk-top PC's).

If displays to the "GUI" screen controller appear to be slower using the V3.0 GLOBAL.EXE compared with previous versions of GLOBAL.EXE then the following registry setting should be enabled to restore the original (i.e. pre-V3.0) Initiate Display processing:

..\Global\Client\Screens\GUI\SendImmediateMessage

- The following registry options are now recognised by the Global Windows Workstation V3.0 components within the V3.0 GLOBAL.EXE:

..\Global\Client\Screens\GUI\Colour\EMailAddress
..\Global\Client\Screens\GUI\Colour\SpeedbaseA13Background
..\Global\Client\Screens\GUI\Colour\SpeedbaseA13Text
..\Global\Client\Screens\GUI\Colour\WebAddress

These new options, which are analogous to the equivalent options in the [colour] section of the GSMWIN32.INI file, are fully described in section A.4 of the Global Windows Workstation V3.0 Notes (MGUNV30.DOC);

- The following registry options are now recognised by the Global Windows Workstation V3.0 components within the V3.0 GLOBAL.EXE:

..\Global\Client\Screens\GUI\Miscellaneous\IgnoreSpeedbaseMode
..\Global\Client\Screens\GUI\Miscellaneous\LocalTempDirectory
..\Global\Client\Screens\GUI\Miscellaneous\MAPIInterface
..\Global\Client\Screens\GUI\Miscellaneous\SingleClickContextHelp
..\Global\Client\Screens\GUI\Miscellaneous\TextModeFontFile
..\Global\Client\Screens\GUI\Miscellaneous\TextModeFontWide
..\Global\Client\Screens\GUI\Miscellaneous\TextModeFontFileWide
..\Global\Client\Screens\GUI\Miscellaneous\WebBrowser

These new options, which are analogous to the equivalent options in the [miscellaneous] section of the GSMWIN32.INI file, are fully described in section A.7 of the Global Windows Workstation V3.0 Notes (MGUNV30.DOC);

- The following registry options are now recognised by the Global Windows Workstation V3.0 components within the V3.0 GLOBAL.EXE:

..\Global\Client\Screens\GUI\KeyMappings\EuroCharacterInput
..\Global\Client\Screens\GUI\KeyMappings\EuroCharacterOutput

These new options, which are analogous to the equivalent options in the [keymappings] section of the GSMWIN32.INI file, are fully described in section A.11 of the Global Windows Workstation V3.0 Notes (MGUNV30.DOC);

- The following registry options are now recognised by the Global Windows Workstation V3.0 components within the V3.0 GLOBAL.EXE:

    ..\Global\Client\Screens\GUI\Documentation\Doc*NN*

    where *NN* is a decimal number between 01 and 99. These new options, which are analogous to the equivalent options in the [documentation] section of the GSMWIN32.INI file, are fully described in section A.14 of the Global Windows Workstation V3.0 Notes (MGUNV30.DOC).

    Important Note: The allowed values for the Doc*NN* options recognised by GSMWIN32.EXE in the [documentation] section of the GSMWIN32.INI file are 01 to 99; whereas the allowed values for the Doc*NN* options recognised by GLOBAL.EXE in the "documentation" key of the registry are 10 to 99;

● The following registry option must be added to use the Global Application Explorer (GX) thin-client option:

    ..\Global\Client\Nucleus\GXBufferSize

    This option is described in more detail in the Global Application Explorer (GX) Notes;

● The following registry options are reserved for future use, and should NOT be used:

    ..\Global\Client\AllowClientReconnectionAllServers
    ..\Global\Client\Nucleus\ValueTrapTableEntries
    ..\Global\Client\Nucleus\Enable32BitExceptions
    ..\Global\Client\Nucleus\SYBIF1ReservedBit04
    ..\Global\Client\Nucleus\SYBIF1ReservedBit08
    ..\Global\Client\Nucleus\SYBIF1ReservedBit10
    ..\Global\Client\Printers\WinPrint\5*nn*\OpenViaSeparateThread

    The V3.0 BACNAT repackaging for Global System Manager (Windows) also includes the following features in GSMCONS.EXE:

- GSMCONS.EXE now traps the Close Button on the Console application window. If a close is attempted when a TAP is loaded the standard Windows "Wait/End-Task/Cancel" dialogue box will appear;

- GSMCONS.EXE now includes support for 8-bit, "international character set" TAP's (e.g. $.830). To enable the 8-bit character set option, the following setting must be included in the [miscellaneous] section of the GSMCONS.INI file:

    Enable8BitMode=On

IF THIS OPTION IS ENABLED AN 8-BIT TAP (E.G. $.830) MUST BE USED OTHERWISE THE KEYBOARD WILL NOT FUNCTION CORRECTLY.

In addition, the following specialised setting is available in the [diagnostics] section of GSMCONS.INI:

InputCharacterDiagnostics=On

DO NOT ENABLE THE InputCharacterDiagnostics OPTION UNLESS TOLD TO DO SO. Note that in pre-release versions of GSMCONS.EXE, this option was in the [miscellaneous] section of the GSMCONS.INI file.

A new [isotranslations] section has been added to GSMCONS.INI to allow input character translations to be specified by settings of the following format:

ToISOChar#*nn*=#*hh*

where *nn* is a hexadecimal character between 80 and FF and *hh* is any hexadecimal character.

The 8-bit character handling within Global System Manager assumes an ISO-8859 compliant character set. The various ToISOChar#*nn* settings, within the [isotranslations] section, allow a non-ISO-8859 compatible 8-bit character generated by the keyboard (when a non-ISO-8859 compliant code-page is being used) to be translated to an equivalent ISO-8859 character before transmission to the host. Note that most country-specific, international code pages are non-ISO-8859 compliant.

For every ToISOChar#*nn*=hh setting in the GSMCONS.INI file there should be an equivalent entry in the TRANSLATION section of the TAP. For example, suppose the ISO character #C0 appears as #84 in the code page (i.e. #84 is in the range #80 - #9F, which is reserved for control characters in the ISO-8859 character set). The following entry must be included in the [isotranslations] section of the GSMCONS.INI file:

ToISOChar#84=#C0

So that a byte-value of 84 (hex.) from the keyboard will be translated to a value of C0 (hex.) before being transmitted to the host. In the TRANSLATIONS section of the TAP, the following equivalent entry must be added:

C0 C0 84

In this TRANSLATIONS entry the first C0 is the input character value as seen from the host (i.e. after translation by GSMCONS.EXE). The second C0 is the ISO-8859 compliant internal character value (i.e. the character value that application programs will use). The 84 is the output character value (i.e. characters are translated from ISO-

8859 to code-page standards by the host before being sent to GSMCONS.EXE (i.e. GSMCONS.EXE does not need to include any output character translations).

Note that the hex value #DE is used as the lead-in for some foreign character sets. This hexadecimal value is ignored as an input keystroke.

• GSMCONS.EXE has been enhanced to suppress the display of Diagnostics Messages. By default, Diagnostic Messages are now suppressed. The display of Diagnostic Messages can be enabled by the following new setting in the [diagnostics] section of the GSMCONS.INI file:

>   DiagnosticDisplays =On

Note that in pre-release versions of GSMCONS.EXE, this option was in the [miscellaneous] section of the GSMCONS.INI file;

• The Auxiliary Printing option in GSMCONS.EXE has been enhanced to support the Close Printer option. This option, which flushes the print data to a network printer by closing and re-opening the print device, is selected when a value of 100 is added to AuxPrint "Printer Type" registry setting, as described above;

• A new [diagnostics] section has been added to the GSMCONS.INI file. The following options have been moved from the [miscellaneous] section to the [diagnostics] section:

>   InputCharacterDiagnostics
>   LogDisplays
>   DiagnosticDisplays

• This list summarises the options in the GSMCONS.INI file that are recognised by the V3.0 GSMCONS.EXE:

>   [tcpipparameters]
>   HostID
>   Port=23
>   WinSockReceiveBufferSize
>   NoDelay=Off
>
>   [miscellaneous]
>   ExitOn$E=Off
>   KeyboardTimeout=0
>   SendInitialEscape=Off
>   ConsoleTitlePrefix=Global Thin Client
>   Enable8BitMode=Off
>
>   [buffers]
>   DisplayBufferSize=512

SharedBufferSize=2048
ReceiveBufferSize=512

[printers]
AuxiliaryPrinter
AuxPrinter
AuxPrinter1
AuxPrinter2
AuxPrinter3
AuxPrinter4
AuxPrinter5
AuxPrinter6
AuxPrinter7
AuxPrinter8
AuxPrinter9
AuxPrinterBuffering=On
NetworkPrinter
NetPrinter0
NetPrinter1
NetPrinter2
NetPrinter3
NetPrinter4
NetPrinter5
NetPrinter6
NetPrinter7
NetPrinter8
NetPrinter9

[colours]
BrightYellow=Off
BrightWhite=Off
BrightGreen=Off
BrightBlue=Off
BrightRed=Off
BrightMagenta=Off
BrightCyan=Off

[isotranslations]
ToISOChar#*nn*=#*hh*

[diagnostics]
InputCharacterDiagnostics=Off
DiagnosticDisplays=Off
LogDisplays=Off

GSM (Windows) BACNAT variant 3.1

The V3.1 BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE (note that this release does **NOT** include GLSERVER.EXE or GLCONS.EXE):

● The NETWORK screen controller has been enhanced to automatically detect a connection from the Global Application Explorer (GX.EXE). When a GX connection is detected the GSM start-up code interfaces directly with the GX sign-on dialogue box (i.e. instead of sending character strings to a non-GX thin-client emulator).

    Important note: GLOBAL.EXE V3.1 is the first version of the Global Client that can be used with the released version (V2.0) of the Global Application Explorer;

● The default value of the following registry setting has been increased to 4000:

    ..\Global\Client\Nucleus\GXBufferSize

● The SVC-61 "DOS-compatible" Find First (#4E) and Find Next (#4F) functions have been supplemented by the equivalent "Windows 32-bit" functions: Extended Find First (#6E) and Extended Find Next (#6F). The extended operations return the full length, zero-terminated filename (up to 255 characters) in addition to the "8.3" DOS compatible filename.

    Important note: These new, extended operations are used by the $LICENCE and $INSTALL utilities. Thus the V3.1, or later, GLOBAL.EXE must be used in order to install products from the Global Product Set (GPS) CD;

● The problem that causes a "pure NETWORK" configuration to soak up 100% CPU usage until the first user signs on, has been fixed. The problem only occurred when all the available consoles were in the NOT CONNECTED state. The problem has been fixed by allowing the first "Initiation Display" operation to complete, buffering the characters, when a console is marked as NOT CONNECTED;

● A problem in the WinPrint printer controller that caused occasional spurious "ERROR H" errors has been fixed. The problem only occurred when a low, nonzero Timeout value (e.g. 1) was configured;

● A problem with the option to by-pass the Global Configuration File (i.e. UseConfigurationFile=Off) has been fixed. The problem causes GLOBAL.EXE to crash if an attempt is made to access a DDF volume that is specified in the registry but not available when the Global Client is loaded. For example, if a configuration includes the following registry entry:

    ..\Global\Client\Data\DiscreteDataFile\DDF1=GSM260

but directory GSM260 is not present, the Global Client will crash if an attempt is made to access unit 260 etc.

- The DDF controller has been improved to allow UNC pathnames to be specified. For example:

  ..\Global\Client\Data\DiscreteDataFile=\\GLOBALSERVER\GSM\GSM200

  Important Note: This version of the Global Client will NOT operate with Windows 95 OSR1.

- The Global Client SVC-61 interface has been enhanced to send Reset operations to the Speedbase Btrieve/SQL Gateway (SPEEDBAS.EXE). This enhancement ensures that the Speedbase Gateway can correctly close open files and clear outstanding locks when a user is restarted (e.g. when the $STATUS RES, CAN or CLR commands are used).

  Important note: The version of the Speedbase Gateway (SPEEDBAS.EXE) must be V1.81, or later, if the version of GLOBAL.EXE is V3.1, or later;

- A problem in the File Executive "Read Shared Lock" operation has been fixed. This problem caused a variety of unexpected results (e.g. no user associated with a shared lock) with the $STATUS LKE operation;

- The arbitrary limit of 5000 for the Port number in the NETWORK screen controller has been removed;

- GLOBAL.EXE has been enhanced to accept the following new command line arguments:

  /EO=*oooo*   Operator-ID
  /ET=*ttttt*   Terminal type

  The order of precedence for the GUI console default operator-id is:

  /EO=*oooo* command line option
  HKEY_CURRENT_USER\OperatorID
  HKEY_LOCAL_MACHINE\Software\Global\Client\Screens\GUI\OperatorID

  Note that the "..\GUI\OperatorID" settting was not included in the V3.0 GLMACH.TLT.

  The order of precedence for the GUI console default terminal type is:

  /ET=*ttttt* command line option
  HKEY_CURRENT_USER\TerminalType
  HKEY_LOCAL_MACHINE\Software\Global\Client\Screens\GUI\TerminalType

  Note that the "..\GUI\TerminalType setting was not included in the V3.0 GLMACH.TLT;

● A new function is now available to return the next Printer/Spooler-Unit combination from the table established using the following registry settings:

    ..\Global\Client\Printers\SpoolUnitForPrinter5*nn*

This option is reserved for use by the $SPM utility.

● The <SYSREQ> V keystroke combination was reserved to enable diagnostics. This option has been re-instated to allow <SYSREQ> V (i.e. OVV) to be used as an (unofficial) end-user System Request;

● The following new registry option is now recognised:

    ..\Global\Client\Nucleus\LocalPCFName

This option, which sets the #04 bit of the internal System Variable SYBIF1, is reserved for future use;

● The Global Client, GLOBAL.EXE, has been enhanced to support a direct TCP/IP connection to the Speedbase Btrieve Gateway, SPEEDBAS.EXE, and Speedbase Btrieve NLM, SPEEDBAS.NLM. This new option is enabled by the following registry settings:

    ..\Global\Client\Gateways*nn*\ProtocolSequence=gsmtcpip
    ..\Global\Client\Gateways*nn*\Port=<*port number of the Gateway/NLM*>

Note that the "Port" setting for the "gsmtcpip" protocol replaces the "Endpoint" setting for the various RPC protocols.

The following registry settings have the same meanings for the "gsmtcpip" protocol:

    ..\Global\Client\Gateways*nn*\GatewayServerName=<*server name of the Gateway/NLM*>
    ..\Global\Client\Gateways*nn*\NetworkAddress=<*network address of the Gateway/NLM*>

The following registry setting is also available for the "gsmtcpip" protocol:

    ..\Global\Client\Gateways*nn*\EnableNoDelay

Important Note: The "gsmtcpip" option and " EnableNoDelay" setting are reserved for future use.

- A new function in the (unreleased) V3.1 Global Server (GLSERVER.EXE) that provides a TCP/IP "echo" facility has been implemented. This option is enabled using the following registry setting:

  ..\Global\Servers\N\ExtraTCP/IPEchoPort   (*sic*)

  This value, **which is reserved for future use**, should be set to the port number of the "echo port". A value of 0 disables this option;

GSM (Windows) BACNAT variant 3.2

The V3.2 BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE, GLSERVER.EXE and GLCONS.EXE (note that this release does **NOT** include GSMCONS.EXE). Note that GLOBAL.EXE V3.2 was immediately superceded by GLOBAL.EXE V3.2B to improve the interface to GX V2.2 (see below):

- The version of the Global Windows Workstation (GUI) module included in GLOBAL.EXE is V3.2. Thus, the full version number of GLOBAL.EXE is V3.2/V3.2. The inclusion of the V3.2 GUI module fixes a problem in GLOBAL.EXE that causes the optional bitmap wallpaper to resize incorrectly under some conditions;

- A long-standing problem in the 32-bit CCI that resulted in random STOP 1002, STOP 601 and various NO BASE errors in Partition-1 of Screen-1 (i.e. on the screen being used by User Number 1) has been fixed. The various exceptions on User Number 1 appeared to be random but could be correlated to other users running $E;

- A ***VERY SERIOUS*** problem with the RPC interface on Windows 2000 has been fixed. The problem can cause NETWORK errors even on "local RPC" configurations. Other file-related problems may also occur. The problem only affects 32-bit programs, including $MENU32. The problem appears as a spurious NETWORK ERROR. When the Diagnostic Displays option is enabled the following details are obtained:

  ..\vc0f.c Error 1734 from AA400 line 429
  The array bounds are invalid.

- A problem with the handling of the GSMRPCTimeout option in the gsmlrpc interface has been fixed. This problem manifested as a bug in $V when allocating a new volume on a file server. The Allocate operation **appeared** to work but actually corrupted the 00SYSDOM.SVL file (and renamed it to 00*xxxxxx*.SVL, where *xxxxxx* was the name of the sub-volume that was being allocated). Furthermore, the first 3 sub-volumes were renamed to 01.SVL, 02.SVL and 03.SVL. The problem was caused by the gsmlrpc time-out expiring during the relatively long Allocate operation. This has been fixed by returning a NETWORK ERROR if the time-out expires. Furthermore, the default time-out period has been increased from 5 seconds to 10 seconds. This obscure problem only appears to occur on slow hard-disks with FAT filing systems. Volume allocation on NTFS filing systems is usually extremely rapid;

- The GX interface has been significantly enhanced to support asynchronous receive operations and now maintains separate buffers for receives and transmits. The existing registry setting;

  ..\Global\Client\Nucleus\GXBufferSize

  specifies the size of the transmit buffer (with a default value of 16384). The following new registry setting:

  ..\Global\Client\Nucleus\GXRXBufferSize

  specifies the size of the receive buffer (with a default value of 4096);

- A number of display problems affecting the operation of 16-bit applications in GX window-0 have been fixed;

- The following options have been added to improve the performance of GX:

  ..\Global\Client\Screens\Network*NN*\NoDelay   (single channel)
  ..\Global\Client\Screens\Network\NoDelay   (all channels)

  THE NoDelay OPTION SHOULD BE ENABLED TO OBTAIN THE BEST PERFORMANCE FROM GX.

- The interface to GX has been improved to prevent the STOP 8628 condition that occurs if the GX output buffer fills up. However, for this change to be effective GSM SP-4 must be applied.

  Important Note-1: The following registry option is pertinent for GLOBAL.EXE/GLCONS.EXE V3.2 and V3.2A if, **and only if**, GX is being used:

  ..\Global\Client\Nucleus\EnableSVC89

  This setting is ignored by all versions of GLOBAL.EXE/GLCONS.EXE prior to V3.2. This means that if GX is being used, **GSM SP-4 cannot be used with any version of GLOBAL.EXE/GLCONS.EXE prior to V3.2**.

  The setting **must** be set to "Off" (the default value) if GX is being used and the version of GLOBAL.EXE/GLCONS.EXE is V3.2, or V3.2A, and the GSM SP level is SP-3, or earlier.

  The setting **must** be set to "On" if GX is being used and the version of GLOBAL.EXE is V3.2, or V3.2A, and the GSM SP level is SP-4, or later (otherwise a STOP 25018 will result when attempting to use GX).

The above rules only apply if GX is being used. The "EnableSVC89" registry setting has no meaning if GX is not being used.

Important Note-2: This complicated situation has been simplified by GLOBAL.EXE/GLCONS.EXE V3.2B, and later (see section 5.18). The level of the GSM Service Pack (i.e. SP-3, or earlier; or SP-4, or later) is automatically determined by GLOBAL.EXE/GLCONS.EXE V3.2B so that the "EnableSVC89" registry setting is not required (and will not be included in future versions of GLMACH.TLT).

The complex situation is summarised thus:

GSM SP level	GLOBAL.EXE/GLCONS.EXE	Comments
SP-3, or earlier	V3.1, or earlier	OK but STOP 8628 may occur if the GX TX buffer is too small (increase GXBufferSize)
SP-3, or earlier	V3.2 or V3.2A	EnableSVC89 must be "off" STOP 8628 may occur if the GX TX buffer is too small (increase GXBufferSize)
SP-3, or earlier	V3.2B, or later	OK (EnableSVC89 will be ignored) but STOP 8628 may occur if the GX TX buffer is too small (increase GXBufferSize)
SP-4, or later	V3.1, or earlier	Fails with STOP 25018 if GX used
SP-4, or later	V3.2 or V3.2A	EnableSVC89 must be "on" otherwise STOP 25018 will occur; STOP 8628 problem fixed
SP-4, or later	V3.2B, or later	OK (EnableSVC89 will be ignored) and STOP 8628 problem fixed

• The V3.2 Global Clients (GLOBAL.EXE and GLCONS.EXE) recognise GX connections for E-commerce users (see Appendix K for further details);

- The Console Executive "Get Next Block" operation has been enhanced to allow a variable block size. This should speed up GX operations under all conditions; and display operations, under some conditions;

- A problem in the $BYE handling that resulted in GLOBAL.EXE crashing has been fixed. This problem was caused by a bug in the WinPrint controller shut-down logic;

- A problem with the handling of the following registry setting:

    ..\Global\Client\Printers\WinPrint\5*NM*\Timeout

    that could result in a spurious ERROR-H has been fixed;

- The following new registry settings can be used to enable the Concurrent GUI option on a selective basis:

..\Global\Client\Screens\GUI\ConcurrentGUI	(a)
..\Global\Client\Screens\Network*NM*\ConcurrentGUI	(b)
..\Global\Client\Screens\Network\ConcurrentGUI	
(c)	
..\Global\Client\Screens\Serial*NM*\ConcurrentGUI	(d)
..\Global\Client\Screens\Serial\ConcurrentGUI	(e)

    Note that option (b) takes precedence over (c); and (d) takes precedence over (e). These new settings should NOT be mixed with the existing:

    ..\Global\Client\Nucleus\ConcurrentGUI

    which takes precedence over all of them.

- The Serial Port Driver (SPD) interface is now supported on GSM (Windows). Further details of the specialised interface are available on the Technical Note section of the Global web-site;

- The DOSPrint interface includes support for the PRIFN$ sub-routine. This sub-routine allows an application to specify the precise Windows filename of the next file to be printed by a particular user on a particular printer. The following registry setting must be enabled in order for the PRIFN$ file name to be recognised by a printer:

    ..\Global\Client\Printers\DOSPrint\5*NM*\DynamicFileName

- A problem in GLOBAL.EXE that results in a crash when (un-tested) programs or utilities perform illegal operations on un-initialised FD's has been fixed;

- The following new registry option is available:

..\Global\Client\Screens\Serial\DefaultTerminalType

to provide a default Terminal Type for all those serial devices that do not have explicit registry settings:

..\Global\Client\Screens\Serial*NN*\TerminalType

- The Global Client, GLOBAL.EXE, now recognises the following command line argument to introduce a small delay before accessing any Global Servers:

/V=nn

where *nn* is the delay time, in seconds. This option, which should be regarded as a stop-gap until GLSERVER.EXE is available as an NT Service, gives any Global Servers the chance to initialise before being accessed by the Global Client.

- The following new registry settings are now recognised by the IDF controller:

..\Global\Client\Data\IntegratedDataFiles\Drive*N*\ImmediateClose
..\Global\Servers*x*\Data\IntegratedDataFiles\Drive*N*\ImmediateClose

If this option is enabled the IDF volume is closed immediately after every read or write operation. This option is expected to be useful when transferring files between GSM (Windows) and GSM (Unix).

- The IDF controller also recognises the following new registry setting:

..\Global\Client\Data\IntegratedDataFiles\Drive*N*\VirtualDiskette
..\Global\Server*x*\Data\IntegratedDataFiles\Drive*N*\VirtualDiskette

If this option is enabled the IDF volume is NOT dynamically sized at initialisation time. This option is useful for transferring files between GSM (Windows) and GSM (Unix). Note that "incorrect transfer length" errors are suppressed for Virtual Diskettes for Read operations.

- SVC-61 has been enhanced to support the following DOS compatible functions:

#2A	Get System date from Windows (same as the equivalent DOS call)
#2B	Set System date (same as the equivalent DOS call)
#2C	Get System time from Windows (superset of the equivalent DOS call)
#2D	Set System time (same the equivalent DOS call)

- In addition, SVC-61 has been enhanced to support the following new functions

#70	Create new Windows process
#63	Format Windows error number to a verbose message

SVC-61 function #70 is a direct replacement for the SVC-70 interface.

At the time of writing, the draft File Converters V8.2 Manual is being updated to include full details of all these new operations. When these changes have been completed the draft FC8.2 manual will be available on the Technology section of the Global web site.

The following changes and enhancements are documented for completeness only. In general, these options should not be used or required:

- The following option has been added:

  ..\Global\Client\Screens\Network*NN*\SendIACsequence

  This highly-specialised option allows a byte-string to be sent to the thin-client or terminal emulator immediately the telnet connection has been made. This option has been introduced to allow the NETWORK controller to send telnet "Interpret as Command" (IAC) sequences to the terminal emulator. **DO NOT USE THIS OPTION IF THE TERMINAL EMULATOR IS GSMWIN32.EXE, GSMCONS.EXE OR GX.INI;**

- The handling of the following highly-specialised registry setting:

  ..\Global\Client\Screens\Network*NN*\Diagnostics\LogIACSequences

  has been modified to write the log-file "iaclog*NN*.bin" log directory rather then log-file "keylog*NN*.bin" in the current directory;

- The Console Executive now supports a diagnostic option to dump the state of the GX buffers and control information to the log-file \log\cacbsvc86dump.log. This operation is reserved for internal use only;

- GLSERVER.EXE has been modified to allow a "MasterNodeID" of "*". This setting, which is reserved for future use, by-passes the Master Node-id validation code;

- The following highly-specialised registry setting:

  ..\Global\Client\Screens\Network*NN*\Diagnostics\LogConsoleDisplays

  enables a new diagnostic option in the Network controller to log all out-going characters to the log-file "networkdisplay*NN*.bin" in the log directory;

- The following registry option is reserved for internal use:

  ..\Global\Client\Printers\WinPrint\5*NN*\AdminSystemOrderDirectory

- The GSM (Windows) SVC-61 interface includes support for a highly-specialised interface to a particular Windows DLL (DBX.DLL). This interface will be extended to provide a generic interface to Windows DLL's;

- A new SVC, SVC-88, is now available to invoke SVC-61 operations without waiting for an immediate response. The following registry option alters the poll rate associated with SVC-88:

  ..\Global\Client\Nucleus\SVC88PollDivisor

  SVC-88 is currently reserved for future. **DO NOT ATTEMPT TO USE IT**;

- The following highly-specialised registry setting has been withdrawn:

  ..\Global\Client\Diagnostics\LogNetworkConnections

- The following registry settings are reserved for internal use only:

  ..\Global\Client\Screens\GUI\SpecialEcommerceUser
  ..\Global\Client\Screens\GUI\SpecialSupportUser
  ..\Global\Client\Screens\GUI\SpecialTextOnlyUser
  ..\Global\Client\Screens\Serial*NN*\SpecialEcommerceUser
  ..\Global\Client\Screens\Serial*NN*\SpecialSupportUser
  ..\Global\Client\Screens\Serial*NN*\SpecialTextOnlyUser

  USE OF THESE REGISTRY SETTINGS WILL PRODUCE UNPREDICTABLE RESULTS.

GSM (Windows) BACNAT variant 3.2A

The V3.2A BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE only (note that this release does **NOT** include GLSERVER.EXE, GLCONS.EXE or GSMCONS.EXE). Note that GLOBAL.EXE V3.2A was immediately superceded by GLOBAL.EXE V3.2B to improve the interface to GX V2.2 (see below):

- A problem that resulted in GX appearing to hang under some conditions has been fixed in the V3.2A version of GLOBAL.EXE. **All users running with GX should be using V3.2A GLOBAL.EXE, or later.**

GSM (Windows) BACNAT variant 3.2B

The V3.2B BACNAT repackaging for Global System Manager (Windows) includes the following features in GLOBAL.EXE and GLCONS.EXE (note that this release does **NOT** include GLSERVER.EXE or GSMCONS.EXE):

- GLOBAL.EXE/GLCONS.EXE V3.2B automatically determines the level of the GSM Service Pack (i.e. SP-3, or earlier; or SP-4, or later) so the "EnableSVC89" registry setting (see section 5.16) is not required.

   ALL USERS RUNNING GX ARE RECOMMENDED TO UPGRADE TO GSM SP-4 AND GLOBAL.EXE/GLCONS.EXE V3.2B TO AVOID THE STOP 8628 CONDITION THAT CAN OCCUR OCCASIONALLY IF THE GX TRANSMIT BUFFER FILLS UP;

- The following registry settings allow the time-out period on "true" RPC operations (e.g. when using the "ncacn_ip_tcp" Protocol Sequence) to be specified:

   ..\Global\Client\Servers\RPCTimeout   (interface to all RPC servers)
   ..\Global\Client\Servers*x*\RPCTimeout   (interface to single RPC server)

   The timeout value can be any integer value from 0 to 10:

0	Try the minimum amount of time for the network protocol being used. This value favors response time over correctness in determining whether the server is running;
1 - 4	Behaviour (proportionally) between a value of 0 and 5;
5	Try an average amount of time for the network protocol being used. This value gives correctness in determining whether a server is running and gives response time equal weight. This is the default value;
6 - 8	Behaviour (proportionally) between a value of 5 and 9;
9	Try the longest amount of time for the network protocol being used. This value favors correctness in determining whether a server is running over response time.
10	Keep trying to establish communications forever;

   Important Note-1: The values are not in seconds. These values represent a relative amount of time on a scale of zero to 10.

   Important Note-2: The "RPCTimeout" registry setting is ignored if the Protocol Sequence is "gsmlrpc". If the Protocol Sequence is "gsmlrpc" the "..\Global\Client\GSMRPCTimeout" registry setting must be used to adjust the time-out value (in seconds).