GSM IPL Units & Various Unit Assignments

1. Introduction

This document describes a number of important issues concerning the GSM load process. Although this note was produced as a result of an investigation into a problem with the 32-bit run-time system, most of the details are applicable to 16-bit GSM as well.

The note only considers GSM (Windows NT). However, most of the considerations also apply to GSM (Unix) configurations.

2. The GLOBAL.EXE and GLCONS.EXE Versions

The BACNAT nucleus variant is one of the vital items of information required for problem diagnosis.

As explained in various external documents, the variant number of GLOBAL.EXE is displayed by the "About/Global Client" from the Help menu.

The variant number of GLCONS.EXE is displayed on the caption bar (this only applies to GLCONS.EXE later than V2.8).

Both the GLOBAL.EXE and GLCONS.EXE modules (V2.9, or later) automatically create a log file, *gsminfo.bin*, which contains, amongst other useful Global information, the variant number of the .EXE module. ALWAYS EMAIL A COPY OF *gsminfo.bin* WHEN LOGGING ANY PROBLEMS WITH GSM (WINDOWS NT).

3. The IPL (Loading $MONITOR)

For GSM (Windows NT) configurations the Windows file or directory containing the GSM IPL is specified as a command line argument to the GLOBAL.EXE or GLCONS.EXE command. For example:

```
C:\GSMNT\GLOBAL.EXE   C:\GSMNT\GL-IPL.DLV
C:\GSMNT\GLOBAL.EXE   C:\GSMNT\GSM200
C:\GSMNT\GLCONS.EXE   C:\GSMNT\GL-IPL.DLV
C:\GSMNT\GLCONS.EXE   C:\GSMNT\GSM200
```

The full command line can be inspected and/or amended by clicking on the "Shortcut" tab of the Properties of the short-cut or Start Menu entry.

It is our intention to change the manner in which the IPL device is specified. The command line argument technique will be superceded by the use of the following registry key:

..\Global\LoadDevice

This is currently available as:

..\Global\BootDevice

When a single-unit SYSIPL file (e.g. GL-IPL.DLV) is specified as the bootstrap device there is no question regarding the location of the IPL files (see below). However, when a multiple-unit domain directory (e.g. GSM200) is specified as the bootstrap device the SYSRES volume is potentially any one of many sub-volume files (e.g. 01SYSRES.SVL, 02NOTSYS.SVL etc.). When GSM is installed, and a local SYSRES is selected, the unit number of the target SYSRES volume is patched into the 00xxxxxx.SVL domain header file. Thus, if 01SYSRES.SVL is renamed to 02SYSRES.SVL, for example, the GSM load process will fail to locate the SYSRES sub-volume and the IPL load will fail.

Historically, for GSM (BOS), GSM (DOS) and GSM (Novell) configurations, the IPL device (i.e. SYSIPL or SYSRES) held all the nucleus files (e.g. +.J0, +.J5 and +.JW etc.), the configuration file and the special $MONITOR file. However, for GSM (Windows NT) and GSM (Unix) the +.W0, +.C0, +.W1 and +.C2 libraries are dummy libraries that are unused by the GSM load process. The only files on the IPL device that are used **directly** by the load process are:

- the configuration file;
- $MONITOR.

It is our intention to remove the requirement for the Global configuration file. All the configuration file parameters will be replaced by settings in the registry. The following registry key will control the new option:

..\Global\UseConfigurationFile

3. Locating and Loading the Monitor Pages

The first action of the $MONITOR initialisation process is to load the Monitor Pages (e.g. $MON01). For convenience, all the Monitor Pages are held in the P.$MON library.

Whereas the configuration file and $MONITOR are loaded by a primitive IPL loader (which doesn't handle standard numeric unit numbers), the pages in the P.$MON library are loaded by the normal GSM File Handler. Thus, a unit number (e.g. 110, 201 etc.) to locate the P.$MON library must be available.

The GSM loader performs a "sanity check" to ensure that the "Boot Device" file name is the same as the filename associated with the IDF0 setting.

The "Start IPL Unit" is patched into the $MONITOR file during GSM installation by the $F PIP command. The $MNDISP utility can be used to display the value that is patched into the $MONITOR file. For example:

```
Bootstrap message display enabled
Number of Memory Banks   0 of  57 Kbytes
System Stack Size      0 bytes
Number of Memory Pages  57
Command Unit           201
Unit 100 aliased to    140
Start IPL unit         201
User File Unit         A01
Hardware node-id
```

It is our intention to allow the values patched into the $MONITOR file to be over-ridden, and eventually replaced, by settings in the registry. The following registry key will enable the new option:

..\Global\Client\Monitor\$MONITOROverride

Under all normal conditions (i.e. following a standard installation) the P.$MON library will be on the same unit as the $MONITOR file (e.g. both on SYSIPL or both on SYSRES). If however, the configuration is changed (e.g. by moving the SYSIPL or SYSRES unit and forgetting to re-PIP the $MONITOR file) the locations of the $MONITOR and P.$MON files may "drift apart". **If the P.$MON library is incompatible with the $MONITOR, a variety of unusual and obscure errors will result**.

4. Accessing the Command Unit

A secondary action of the $MONITOR initialisation process is to assign the $CP and $DP "Command unit" assignments. The "Command Unit" is patched into the $MONITOR file during GSM installation by the $F PAM command. The $MNDISP utility can be used to display the value that is patched into the $MONITOR file. For example:

```
Bootstrap message display enabled
Number of Memory Banks   0 of  57 Kbytes
System Stack Size      0 bytes
Number of Memory Pages  57
Command Unit           201
Unit 100 aliased to    140
Start IPL unit         201
User File Unit         A01
Hardware node-id
```

Under all normal conditions the "Command Unit" will be correct (i.e. it will be set to the unit address of the SYSRES volume selected at installation time). If however, the configuration is changed (e.g. by moving the SYSIPL or SYSRES unit and forgetting to re-PAM the $MONITOR file) the locations of the "Command Unit" and the "IPL Unit" may "drift apart". If the contents of the Command Unit (i.e. P.$CMLB0) are slightly incompatible with the contents of the IPL Unit (i.e. $MONITOR) an INITIATION WARNING 302 will result; if the contents of the Command Unit (i.e. P.$CMLB0) are very incompatible with the contents of the IPL Unit (i.e. $MONITOR) a fatal INITIATION ERROR 60 will result.

5. Other Unit Assignments used at Load Time

Two further, less vital Unit Assignments are used by the GSM Load and Initiation process. The "User File Unit" is patched into the $MONITOR file during GSM installation by the $F PUF command. The $M logical unit assignment is set to the "User File Unit". This should normally be set to the SYSRES on the "master" server.

Unlike all the unit assignments described above, the $SW unit (Swap File Unit) is not patched into $MONITOR. This is established by $CUS as a standard Permanent Unit Assignment (the customisation is held in the $STARB file).

6. 32-bit System Dynamic Load Modules (DLM's)

The various System DLM's are loaded from the P.$SDLM0 library on the $$D unit. The $$D unit is established by $CUS as a standard Permanent Unit Assignment (the customisation is held in the $STARB file).

At the time of writing libraries P.$SDLM1 to P.$SDLM9 are not used for System DLM's. However, these libraries are reserved for future use.

7. 32-bit Application Dynamic Load Modules (DLM's)

As explained in Appendix F of the GSM V8.1 Notes (V8.1k, or later), a number of DLM Index files are used to load DLM's from further libraries. The 32-bit Program Loader uses the following search algorithm when loading both System and Application DLM's:

Library	*Unit*	*Via Index File*	*Index File unit*
P.$SDLM0	$$D	none	none (see above)
P.$SDLM[1-9]	$$D	none	none (see above)
variable	variable	$$DLM	$$D
variable	variable	$$DLM0	$P
variable	variable	$$DLM1	$P

The $$DLM Index File is reserved for use for utility DLM's. The $$DLM0 DLM Index File is reserved for use by end-user 32-applications. The $$DLM1 DLM Index File is reserved for use by Global 3000. Note that the DLM search order allows end-user DLM libraries to replace standard, Global 3000 libraries.