DLM Libraries and DLM Library Index Files

1. Introduction

This document describes 32-bit DLM Libraries and 32-bit DLM Library Index Files.

Every 32-bit program or frame contains a number of *External References* to entry-points (i.e. normally sub-routines) within a 32-bit **D**ynamic **L**oad **M**odule (DLM). The DLM's are held in a number of DLM Libraries. Each DLM Library is a standard program library which is created and maintained using $LIB.

The 32-bit loader attempts to resolve the External References by searching through a series of 32-bit DLM Libraries. The 32-bit program loader searches for 32-bit DLM's in both fixed named system libraries and also in free-format, variable named libraries. The names and locations of the variable libraries are defined in a series of DLM Library Index Files. Each DLM Library Index file can hold the name and location of up to 80 DLM libraries.

If the 32-bit load cannot resolve an External Reference, the 32-bit program cannot be run and an error message is displayed. The most common error messages are:

> DLM *dlm_name* not found in search path:
>
> Resolver error code J symbol *sym_name* External symbol not found
> $91 TERMINATED - STOP 116

*where dlm*_name and *sym_name* will be replaced by the name of the actual DLM or symbol that cannot be found.

The first message appears when a referenced DLM cannot be found. This message normally indicates a version mismatch or a problem with the DLM search path (see below).

The second message appears when a referenced symbol name, inside a loaded DLM, cannot be found. This message normally indicates a version mismatch but, it too, can indicate a problem with the DLM search path.

Note that these messages are accurate for GSM SP-6 (similar error messages appear for earlier versions of GSM). Note also that the "Resolver Error" is always followed by a single

character code. Error codes other than "J" (and STOP CODE's other than 116) generally indicate more severe errors and are beyond the scope of this note.

2. The System DLM Library, P.$SDLM0

The loader always searches the System DLM Library, P.$SDLM0, on the $$D volume. Normally, $$D is assigned to either the local SYSRES (i.e. $DP) or the Master SYSRES ($M).

Unless explicitly advised otherwise, neither the $$D unit assignment nor the P.$SDLM0 library should be changed.

3. Extension System DLM Libraries, P.$SDLM1 to P.$SDLM9

Extension System DLM libraries P.$SDLM1 to P.$SDLM9 are reserved for future use.

4. The GSM Utility DLM Library Index File, $$DLM

The GSM Utility DLM Library Index File, $$DLM on unit $$D, contains the names and locations of a number of DLM libraries that are used by various 32-bit GSM utilities. For example, the $$DLM Library Index File released with GSM SP-6 contains the following entry:

```
P.$GSDLM        $$D
```

THE $$DLM INDEX FILE IS RESERVED FOR USE BY GSM AND SHOULD NEVER BE CHANGED.

5. The Global 3000 V5.0 Application DLM Index File, $$DLM1

The Global 3000 V5.0 installation process copies the application DLM Index File, $$DLM1, to the G3PROG unit. Normally, entries in application DLM libraries should be "self-referencing" (i.e. all application DLM libraries should be installed on the $P unit so that all entries in $$DLM1 should include $P as the unit address).

THE $$DLM1 INDEX FILE IS RESERVED FOR USE BY GLOBAL 3000 AND SHOULD NEVER BE CHANGED.

6. Reseller Application DLM Index File, $$DLM0

The application DLM Index File, $$DLM0, is reserved for DLM's developed by resellers. The $DLMMAIN utility is available for resellers to create and maintain the $$DLM0 library.

THE $$DLM0 INDEX FILE SHOULD BE THE ONLY FILE UPDATED BY $DLMMAIN.

7. Loader Search Algorithm

The 32-bit loader searches the System DLM libraries and various other DLM libraries with entries in the DLM Library Index Files in the following order:

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 $$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.