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Restrictions on GSM (DOS) Multi-User Configurations

A recent Hotline investigation has highlighted a restriction in the size of multi-user GSM (DOS) configurations when a relatively large number of screens, connected to 'dumb' i/o cards, are configured. The symptom of the problem is that although 'small' multi-user configurations (e.g. 3-6 serial screens) will load and function correctly, 'medium size' multi-user configurations (e.g. 7-24 serial screens) will crash during loading.

In a GSM (DOS) configuration the screen images and various other console buffers (e.g. Display buffers and Function Key buffers) are allocated in main DOS memory (i.e. below 640Kb). Evaluations have indicated that it would be too inefficient to allocate these buffers in XMS memory, for example. The amount of free memory available for GSM (DOS) is typically 480Kb – 500Kb. This small amount of free memory imposes the screen number limit. The situation has been exacerbated by the introduction of various new features in GSM V8.1 – some of which require the use of memory in the DOS memory area.

The 'serial screen limit' problem also affects both GSM (BOS) and GSM (Novell) configurations. For GSM (BOS) the situation is slightly better (i.e. more serial screens can be configured) because GSM (BOS) can utilise all the 640Kb memory area. For GSM (Novell) the situation is slightly worse (i.e. slightly fewer serial screens can be configured) because the Novell drivers tend to reduce the amount of free DOS memory.

The following example illustrates the problem. The results were obtained from a standard GSM (DOS) 5622 configuration running under Windows 98. All the results were obtained by examining the DIAGLOG.TXT file created when the /D option was added to the GSMLOAD.EXE command line. The important values in the DIAGLOG.TXT file are LOAD ADDRESS of the last +JWCE*nn* printer controller loaded (e.g. +JWCE08) and the previous HIGH MEMORY ADDRESS.

In the GSM (DOS) on Windows 98 test, the following values were obtained.

Number of TTYs	LOAD ADDRESS	HIGH ADDRESS	Result
0 (control)	00038BFC B75C	00093000	Loaded OK
1	0003929E BDFE	0008B000	Loaded OK
4	00039D7E C8DE	00076400	Loaded OK

6	0003A5FA D15A	00068000	Loaded OK
7	003A8CC D42C	00060C00	Crashed
8	0003AB9E D6FE	00059800	Crashed

The ‘control test’ consisted of a single CONSOLE controller. The other results were obtained by adding ‘TTY’ controllers, each with a 132 * 24 image and 1 attribute byte, to the configuration file.

When the size of the screen images was reduced by decreasing the screen width from 132 to 80 the following results were obtained for the 8 TTY configuration:-

Number of TTYs	LOAD ADDRESS	HIGH ADDRESS	Result
8	0003AB9E D6FE	0006D000	Loaded OK

The problem can be avoided by using intelligent TCL i/o cards (e.g. Superport, DataServer, PCC/Ni or GlobeServer). The following results were obtained by replacing the 8 TTY controllers in the configuration that failed (see above) by 16 TCLASYNC controllers:

Number of TCLASYNCS	LOAD ADDRESS	HIGH ADDRESS	Result
16	0003A824 D384	00093000	Loaded OK

Note that the HIGH ADDRESS remains at a relatively high (and safe) value as the console images and control blocks are allocated on the memory on the TCL intelligent card. The number of screens connected via TCL ‘intelligent’ cards is limited by the amount of memory on the TCL card.

The multi-user restriction does NOT occur on GSM (Windows NT) configurations. Although current Global Client (i.e. the V2.6 GLOBAL.EXE) only supports serial screens on Windows NT Workstation and Windows NT Server, the next version of GLOBAL.EXE (V2.7 to be released in Nov-98) will also support serial screens on Windows 95 and Windows 98.