

that when a Read or Write Instruction is encountered, the partition is suspended until the I/O transfer is complete.

However, use of the Start Read and Start Write instructions will allow the partition to continue processing until the next I/O instruction is given. Use of the Test IO Status instruction allows the progress of the I/O transfer to be monitored.

In System 25, peripherals are divided into two types:-

slow peripherals which are assigned to a single partition and can only be driven by that partition.

fast peripherals which are shared between all partitions and can be driven by any partition.

The System 25 I/O instructions provide direct control of all the peripherals assigned to a partition, although disc transfers are normally controlled by invoking supervisory routines.

4.2 Slow Peripheral Control:

Up to 10 slow peripheral devices may be driven by a single partition and the IO instruction contains the logical device number, the address of an area of store for the data transfer and a count of the number of bytes to be transferred.

There are four I/O operations:

Read — Transfers up to 10000 bytes of data from the peripheral into store

Write — Transfers up to 10000 bytes of data from main store to the peripheral

Read Control is reserved for loading programs.

Write Control was used by System Ten to generate control codes outside the 64 character set across the MTIOC interfaces and for compatibility, this is retained on System 25. However on System 25 the 8 bit store allows control characters to be sent with a Write Instruction.

4.3 Fast Peripheral Control

For fast peripherals (discs and magnetic tapes) the logical device number is replaced by a Fast Access Channel (FAC) number. Specific numbers have been allocated for different types of fast peripherals as follows:

0 is used for discs.

1 to 4 are used to address up to four tape drives.

5 to 9 are not used.

4.3.1 Disc Control: System 25 Discs are organised as a logical set of sequential 512 byte sectors. The mapping of logical sectors into real track, head, sector numbers is performed by the Disc Adaptor and is dependent on the particular disc characteristics. System Ten discs are organised as logical 100 byte sectors.

The B field in the IO instruction contains a pointer to a 6 byte Control Block which contains the disc drive number (0 to 15), function, count and sector number. System Ten disc transfers were always a single sector of 100 characters. System 25 compatible data disc transfers provide the same operation and five 100 byte blocks are mapped into a single 512 byte sector on the disc and the logical sector number in the Control Block is divided by 5 to give the equivalent 512 byte sector number.

The System 25 disc functions are

Compatible Mode Read or Write — transfers a single 100 byte sector using System Ten Control Block format (maximum sector number = 99,999)

Extended Compatible Mode Read or Write — transfers a single 100 byte sector using System 25 Control Block format (maximum sector number = 9,999,999)

String Read and Write — a string of up to 10,000 bytes starting at the beginning of a sector and extending over several sectors is transferred for one instruction, using System 25 Control Block format (maximum sector number = 999,999)

Other functions are provided to format the disc and read the status of the previous transfer.

4.3.2 Magnetic Tape Control: The use of the IO instruction fields is the same as to the slow peripherals. The Read and Write instructions cause the transfer of a single block of data to or from the tape.

The Read Control instruction is used to access status information from the tape controller and the Write Control instruction is used for control commands for the control of the tape, e.g. Rewind.

Cartridge Magnetic Tape is driven as a 'slow peripheral'.

5 System 25 Software

System 25 software is largely derived from System Ten to allow the large number of application programs developed for that machine to run on System without change.

System 25 can be run with various levels of software support; at the lowest level a program can be loaded directly into a partition and can run and control its peripherals without reference to any supervisory program. The main ICL supporting software is provided in the following three packages, which together give the facilities normally provided by an operating system.

5.1 DMF III (Data Management Facilities)

This is the basic supervisor package and is derived from the System Ten equivalent, DMF II. It consists of the following components:

CSM (Conversational System Manager) which provides facilities for the main-