MOSN-253

TO: Distribution

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SUBJECT: New DSU-170 DIM

This MOSN obsoletes MOSN-243

A new DSU-170 Device Interface Module (DIM) is being installed which enables

the DSU-170 disk subsystem to handle bursts of heavy disk traffic more rapidly.

Under light loads, response time of the DSU-170 subsystem is virtually

unchanged. Under heavy loads (several read or write requests queued up),

the effective channel capacity of the DSU-170 subsystem is increased by per-

forming all possible seek operations concurrently, and by reordering data

transfers to achieve best channel utilization. This results in smoother and

less severe degradation of subsystem response time to bursts of requests.

The features of this DIM are controlled by several new parameters on the D170

configuration card, as follows:

> D170 frec nrec gioc channel area areamap cqmax prior spint

The new parameters are as follows:

cqmax	controls the amount of reordering of requests that the DIM will do to optimize channel usage. cqmax should be 2 or 3 for the drives currently in use. cqmax will be set by the programming staff.

prior   is a switch to turn the DIM priority

mechanism on and off for experimental

purposes. prior should be 1 for normal

Multics operation.

spint   controls the use of the seek_completion
(IOM system
   only)   special interrupt from the DSU-170 con-

troller. If spint =0, the special inter-

rupt is ignored. If spint =1, the special

interrupt is used. If used, the SPI switch

on the DSU-170 controller must be in the

SPI EN position. SPECIAL INTERRUPTS MAY

NOT BE USED (YET) ON A GIOC SYSTEM.

At present, cqmax, prior, and spint are 3, 1, and 0 respectively.

Programming Note

cqmax must be in the range $0 \leq$ cqmax $\leq$ area, where area is the number of

areas (DSU-170 disks) in the configuration. If cqmax ≤ 0, no seek overlap

is performed. The choice of this parameter value is made from the formula:

$$ cqmax = \left[\frac{t_s}{t_1 + t_t} \right] + 1 $$

where [...] stands for "integer part of", t_s is the mean observed seek time for

the drives, t_1 is the mean observed rotational latency, t_t is the transmission

time of a page.

WARNING - making cqmax unnecessarily large may induce multiprogramming anaomalies.