TO: MSPM Distribution
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These sections on pre-linking during Multics initialization
have been updated to include the several sets of changes
which have been made to the pre-linking strategy since
the publication of the previous documents. Most important
of the changes are the following: 1) It is no longer
planned to perform any dynamic linking during Multics
initialization. 2) The pre-linker has assumed responsibility
for causing linkage segments to be combined.

Identification

Overview of pre-linking during Multics initialization
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Purpose

The following sections describe the pre-link modules used
during Multics system initialization and during process
creation (see Section BJ.9.07). The initialization pre-linker
is used to combine linkage sections and to link all external
references in the hard-core supervisor and the Multics
initializer. Pre-linking avoids the necessity of providing
a dynamic linker for the hard-core ring 0 supervisor.
It also avoids the problem of initializing the Fault Interceptor
Module and the Linker in an environment in which no links
have as yet been made. Pre-linking allows hard-core supervisor
linkage sections to be shared on a system-wide basis without
having to contend with the interlocking problems which
would exist if a dynamic linker wrote into ring 0 linkage
sections. Another purpose of pre-linking is the combining
of linkage sections in the hard-core supervisor and the
Multics initializer. This drastically reduces the amount
of core and the number of segments used by the supervisor
and the initializer. Cf. BD.7.05 on combined linkage.

Description

The pre-linker is composed of two procedure segments:
pre_link_1 and pre_link_2. The first of these (described
in Section BL.7.01) is used only for pre-linking during
Multics initialization. pre_link_1 contains the mechanism
necessary to scan all segments found in the Segment Loading
Table (SLT). It makes calls to the LOT Maintainer (BD.7.05)
to combine linkage sections, and to pre_link_2 to perform
the actual linking. pre_link_2 contains the mechanisms
to scan through a given linkage section and to "snap"
a given linkage pair. It is used in system initialization
and in process creation.