

LOLA  
MEMORANDUM

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ADVANCE  
ISSUE

To: P. Gorin

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From: J. Hussein

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Subject: TP Programming Guidelines

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Please note the following information.

1. INTEGRITY CONSIDERATIONS

1.1. Serial Reusability

All LOLA IMS MPPs (Message Processing Programs) should be serially reusable - which is to say that they should be capable of processing multiple messages in one scheduling. Although this is usually effected by only returning to IMS on obtaining a QC Status code (which is normal programming practice), a LOLA system modification enables an MPP to be reused even after it has returned control to IMS.

An MPP which is not serially reusable is less likely to fail if it has been link-edited with OVERLAY. For this reason, MPPs which are intended to be OVERLAYed should be tested without OVERLAY before implementation. (They should subsequently, of course, be tested with OVERLAY.)

1.2. Termination of Conversations

Any MPP which needs password re-verification level of ACF2 security must terminate each conversation by blanking out the Transaction Code in the SPA. (I.e. the MPP must not roll from one logical unit of work into another. The user may be assisted in doing like work by being presented with a starter screen but this must be to start a new IMS Conversation.)

## 2. PERFORMANCE CONSIDERATIONS

### 2.1. DL/1 Calls Per Step

Ideally, an MPP should execute less than 10 database DL/1 calls per step. Up to 50 is tolerable (although most LOLA MPPs do less than 25). More than 100 DL/1 calls in a step could cause serious performance problems and will eventually lead to the program being given lower priority than the average MPP. (This would be done by SPG/IMS, not by IMS!)

BMPs should issue IMS Checkpoint calls after approximately 2000 DL/1 update calls.

An excessive number of database updates in any one step of an MPP (or between checkpoints in a BMP) will result in all IMS dependent regions abending U0775.

### 2.2. Size

LOLA pre-loads, into the appropriate MPRs (Message Processing Regions), all frequently-used MPPs which are small (<50K). Also pre-loaded are a limited number of medium-sized but very highly-used MPPs. Large MPPs can only be pre-loaded if they are link-edited with overlay.

Ideally, the size of a fully-linked MPP should be less than 75K. Most LOLA MPPs are around 100K. This is a tolerable size.

The significant number of large (>150K), very large (>250K), enormous (>500K) and even bigger (up to 700K!) MPPs makes it very difficult and costly to provide a balanced and responsive IMS system. This objective will become even more difficult to attain (and at even greater cost) as the number of large MPPs increases. It costs approximately one third of a second to load a 300K, un-overlaid, TP Program.

Size is not a problem for BMPs.

### 2.3. Overlay

If an MPP is larger than 100K, consideration should be given to link-editing it with overlay. The following factors should be borne in mind:

- . The MPP's design may be such that overlay would be ineffective (there is little point in using overlay if many of the logic paths will cause most of the overlay segments to be used).
- . The larger the MPP, the more important that it use overlay.
- . The more frequently the MPP is used, the more urgent is overlay (there is no great need to overlay programs which process less than 200 messages per day).
- . A useful rule of thumb is that frequently-used MPPs should use overlay if the load module is greater than 150K.

Overlay is not required for BMPs.

ILLUSTRATIVE EXAMPLES

1. P46 is a 700K MPP
  - link-edited without overlay and therefore too big to pre-load.

On Wednesday 4th April, approximately 1000 seconds of IMS processing time was devoted to loading P46 1000 times.
  
2. B02 is a 300K MPP
  - link-edited without overlay and therefore too big to pre-load.

On Wednesday 4th April, approximately 350 seconds of IMS processing time was devoted to loading B02 1000 times.
  
3. H41 is a 135K MPP
  - un-overlaid but pre-loaded into region IMSM32.

On Wednesday 4th April, approximately 6 seconds of MPP scheduling time was needed to process H41 1000 times in IMSM32.

N.B. Had H41 not been pre-loaded, approximately 250 seconds of IMS processing time would have been needed to schedule it 1000 times.
  
4. R31 is a 200K MPP
  - well-overlaid and pre-loaded into region IMSM23.

On Wednesday 4th April, approximately 2.5 seconds of MPP scheduling time was needed to process R31 1000 times in IMSM23.

N.B. Had R31 not been pre-loaded, approximately 100 seconds of IMS processing time would have been needed to schedule it 1000 times.