

# Release B CDR RID Report

Date Last Modified 6/11/96

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Document

RID ID	CDR	11
Review	Release B CDR	
Originator Ref		
Priority		

Section

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Figure Table

Category Name System Modeling/Sizing

Actionee ECS

Sub Category

Subject End-to-End Model Threads

### Description of Problem or Suggestion:

End-to-End Model Threads have been checked internally, but may not include all processes

### Originator's Recommendation

Provide a mechanism for "publishing" the model and accommodating suggestions.

GSFC Response by:

GSFC Response Date

HAIS Response by: N. Singer

HAIS Schedule

HAIS R. E. M. Armstrong

HAIS Response Date 6/3/96

The End-to-End Analytic Queuing Model is a bottom-up model. It relies on a detailed characterization of workload (in terms of threads and activities) and component performance (in terms of a number of performance parameters for each resource). The model then adds up the total load on each resource so that device utilization and an average waiting time for each resource can be calculated. Then the end-to-end system transit time for each thread is calculated as the sum over its component activities of the waiting time plus processing time for each resource used in the activity.

There are two approaches to validating such a model, and we intend to pursue both of them. The first is to examine for completeness and accuracy the detailed threads, activities, and performance parameters. This requires a time-intensive walkthrough of the input data. The second is to run the model and look at its results (especially resource utilization rates and waiting times, but also thread transit times). If the results are suspicious, then we should be suspicious, too.

To facilitate walking through the input data, we will list the threads and activities in spreadsheet form (the way the designers developed the data in the first place.) In this form, threads and their activities appear together. (In the actual model, they are in separate files for configuration management purposes.) This allows an activity-by-activity (and resource-by-resource) walkthrough of each thread. Then we will publish the hardware component performance parameters as tables; these amount to only a couple of pages.

For a full set of input data, we will publish the model results in the following form. For each thread: its end-to-end transit time, composed of its total waiting time plus its total processing time; and a profile of the percentage of those times spent in each subsystem. For each hardware resource: its utilization rate and its average waiting time. The utilization rate could be presented as color-coded bins, e.g. 0-5%, 5-15%, 15-35%, 35-55%, 55-75%, 75-85%, above 85%.

We will publish these results in Microsoft Excel and Adobe Portable Document Format (pdf), and make them available on EDHS. Nick Singer will act as a clearinghouse for accepting and tracking comments and suggestions. He can be reached by phone (301-925-0520) and by e-mail (nsinger@eos.hitc.com).

Status **Closed**

Date Closed **6/10/96**

Sponsor **Daly**

\*\*\*\*\* Attachment if any \*\*\*\*\*