

PDR RID Report

Date Last Modified 4/12/95
Originator Donald Collins/Milo Medin **Phone No** 818-354-3473
Organization JPL PO DAAC
E Mail Address djc@seanchor.jpl.nasa.gov
Document Ed Lerner

RID ID PDR 158
Review CSMS
Originator Ref
Priority 1

Section EL-16, 17 **Page** SA1-10 **Figure Table** CSMS PDR

Category Name System-level **Actionee** HAIS
Sub Category Subsetting vs Network Cost
Subject Overall Cost Reduction - network bandwidth

Description of Problem or Suggestion:

Data scheduling to reduce network cost. DAACs to submit data to reduce inter-DAAC and science community network cost. Concern illustrated in "Tall Pole" and trade studies slides.

Originator's Recommendation

A trade study should be done to see if costs of effort in scheduling transfers can offset network capacity costs. This issue should be raised at the SDPS PDR.

GSFC Response by:

GSFC Response Date

HAIS Response by: Forman

HAIS Schedule 2/17/95

HAIS R. E. Armstrong

HAIS Response Date 3/30/95

The need for a scheduler to minimize inter-DAAC network bandwidth depends on the requirements for timeliness of data transfer. Development of an "optimized" data transfer schedule requires the time criticality of inter-DAAC data transfers be identified and coordinated with product processing and generation requirements. The inter-DAAC bandwidth estimates presented at PDR did not optimize inter-DAAC scheduling because there is no specific level 3 requirement regarding timeliness of inter-DAAC product delivery. Obviously, it will be necessary for the inter-DAAC links to have the throughput capacity to accommodate an average of 24 hours of traffic load within one day otherwise a backlog will accumulate. In addition, requiring a central entity to coordinate the transfer of data products between the DAACs would reduce DAAC independence.

The current baseline requirement is that output data be produced at a DAAC no later than 24 hours from the time of data availability at the DAAC(s). The sizing for the inter-DAAC bandwidth links is based on the fact that 24 hours of transmission may have to be scheduled within 16 hours to account for network contingency. Optimization of these GFE provided links will require in-depth dynamic analysis at the DAAC-level and at the production process level as well as the overall system level. Regarding distribution to the science community, the data could be staged and delivered overnight to optimize the internet bandwidth requirement. However, the impact of this approach has to be balanced with the yet to be established specifics regarding timeliness of data delivery needed by the science user community.

An effort is under way to identify, prototype and select an appropriate COTS scheduling package that satisfies DAAC-unique requirements, has the capability to prioritize jobs, allocate resources, manage production processes and transfer data using appropriate activation mechanism(s) and also has the capability to monitor the scheduling plans at other DAACs. This effort is currently scheduled to be completed by end of June 1995. The results of this study can be used to identify any potential cost advantages of scheduling data transfers to reduce network bandwidth requirements.

Status Closed

Date Closed 4/12/95

Sponsor Daly

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