N94-22537

Recommendations for a Service Framework to Access Astronomical Archives

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There are a large number of astronomical archives and catalogs on-line for network access, with many different user interfaces and features. Some systems are moving towards distributed access, supplying users with client software for their home sites which connects to servers at the archive site.

This paper will describe many of the issues involved in defining a standard framework of services that archive/catalog suppliers can use to achieve a basic level of interoperability. Such a framework would simplify the development of client and server programs to access the wide variety of astronomical archive systems. The primary services that are supplied by current systems include: catalog browsing, dataset retrieval, name resolution, and data analysis.

The following issues (and probably more) need to be considered in establishing a standard set of client/server interfaces and protocols:

- Archive Access – dataset retrieval, delivery, file formats, data browsing, analysis, etc.

- Catalog Access – database management systems, query languages, data formats, synchronous/asynchronous mode of operation, etc.

- Interoperability – transaction/message protocols, distributed processing mechanisms (DCE, ONC/SunRPC, etc), networking protocols, etc.

- Security – user registration, authorization/authentication mechanisms, etc.

- Service Directory – service registration, lookup, port/task mapping, parameters, etc.

- Software – public vs proprietary, client/server software, standard interfaces to client/server functions, software distribution, operating system portability, data portability, etc.

Several archive/catalog groups, notably the Astrophysics Data System (ADS), are already working in many of these areas. In the process of developing StarView, which is the user interface to the Space Telescope Data Archive and Distribution Service (ST-DADS), we too have been analyzing these issues and the work of others. We propose a framework of standard interfaces for accessing services on any archive system which would benefit archive user and supplier alike.