CRDS Client
Top Level Usage

This document briefly describes how the prototype CRDS client software works from a programmer's perspective at the top level. The CRDS client software interacts with the central CRDS server. The primary purpose of CRDS is the determination of the best reference files to process a dataset. A secondary purpose of the CRDS client is the transparent distribution and caching of reference and CRDS mapping files.

Assuming a CRDS server is running at say crds.stsci.edu, and assuming a user has installed the CRDS package on their machine, the CRDS client can be used to determine the best references for a dataset and cache them on their local machine like so:

```
In[4]:  import crds.client.api as api

In [5]: bestrefs = api.cache_best_references_for_dataset("hst.pmap", "./acs/warren/j8is01j0q_raw.fits")

In [6]: bestrefs
Out[6]:
{'atodtab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jtab/kcb1734ij_a2d.fits',
 'bpixtab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/m8r09169j_bpx.fits',
 'ccdtab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/o151506bj_ccd.fits',
 'crrejtab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/n4e12510j_crr.fits',
 'darkfile': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/n3b10126j_drk.fits',
 'idctab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/p7d1548qj_idc.fits',
 'mdriztab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/ub215378j_mdz.fits',
 'mlintab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jtab/k9c13374j_lin.fits',
 'oscntab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jtab/m2j1057pj_osc.fits',
 'pfltfile': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/n2d1344mj_pfl.fits',
 'spottab': '/Users/jmiller/work/normal/lib/python2.7/site-packages/crds/hst/references/jref/r3301467j_csp.fits'}
```

In this example, the CRDS pipeline context hst.pmap was used by the CRDS server to determine and locally cache the best references for dataset j8is01j0q_raw.fits. This was accomplished in the following series of steps:

1. Using JSONRPC, the CRDS client contacted the CRDS server to obtain each CRDS mapping file associated with hst.pmap and cache it locally.
2. Based on the mappings, the CRDS client determined which portions of the dataset FITS header are required for the best references determination.
3. The CRDS client contacted the server and asked for the names of the best references based on the the pipeline context hst.pmap and the relevant header information. In principle this determination could also be done on the local machine since both CRDS and the required mappings are now installed.
4. The CRDS client contacted the server to obtain each reference file not already in the local cache.
5. The CRDS client returned the mapping from FITS header reference file keyword to local file path of the best reference.