



Current status of VO compliant data service in Japanese Virtual Observatory

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<http://jvo.nao.ac.jp/portal>

Abstract

In these years, standards to build a Virtual Observatory (VO) data service have been established with the efforts in the International Virtual Observatory Alliance (IVOA). We applied these newly established standards (SSAP, TAP) to our VO service toolkit which was developed to implement earlier VO standards SIAP and (deprecated) SkyNode. The toolkit can be easily installed and provides a GUI interface to construct and manage VO service. In this poster, we shows the architecture of our toolkit and how it is used to start hosting VO service.

Architecture of VO Service Toolkit

The architecture of the toolkit is show in Figure 1. Five kinds of access interface are placed behind the http interface, which correspond IVOA standards Table Access Protocol (TAP), Simple Spectrum Access Protocol (SSAP), and Simple Image Access Protocol (SIAP), Simple Cone Search Protocol (SCSP) and data request interface, respectively. ADQL is constructed from the request parameters and is passed to the VOQuery Executor. The VOQuery Exeuctor translates the ADQL to a DBMS's native SQL, and execute the query. Search result (ResultSet object) is converted to a VOTable object by consulting column metadata to a metadata database.

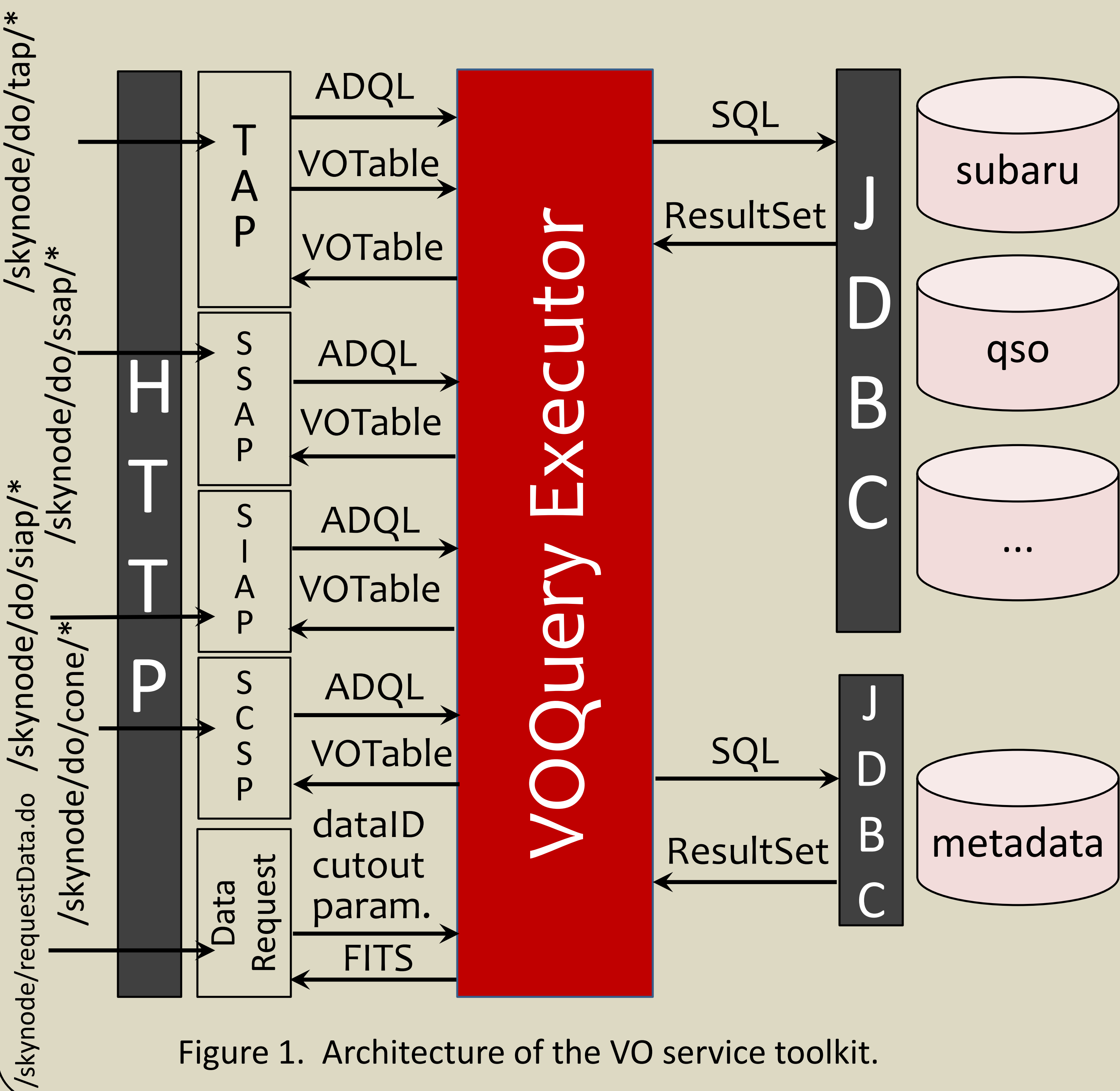


Figure 1. Architecture of the VO service toolkit.

VO Services hosted at JVO

- Subaru Suprime-Cam archive (TAP/SIA)
- Subaru MOIRCS archive (TAP/SIA)
- Subaru HDS archive (TAP/SSA)
- Subaru Deep Survey (SDF, SXDS) (TAP/SIA)
- Stellar Abundances for Galactic Archeology Database (TAP)
- etc...
- AKARI DR1 (TAP)
- IRSF LMC survey (TAP/SIA)
- Kiso UV-X Galaxies Catalog (TAP)

Software

Java DK

Software development kit

Apache Tomcat

web server
Servlet container

Apache Struts

web application framework

Apache Tomcat is used for a web container. Struts framework is used for invoking an appropriate Java method on a http request and returning a result file (VOTable, html, fits, graphics ...). Although PostgreSQL is taken as a target implementation for an backend DBMS, any DBMS which supports JDBC can be easily used as an backend DBMS.

Postgresql

object-relational DBMS

Search with a celestial region condition is implemented by using HTM index and/or PGSphere extension library for PostgreSQL.

How to start VO service

1. create your db
\$ createdb subaru
2. create a table and insert data
\$ psql subaru
postgres=# create table image (...)
postgres=# copy image from '...' delimiter ...
3. register the db on the web GUI (figure 2)
4. register db metadata (figure 3)
5. select table and edit the metadata (figure4,5)
6. edit column metadata (figure6)

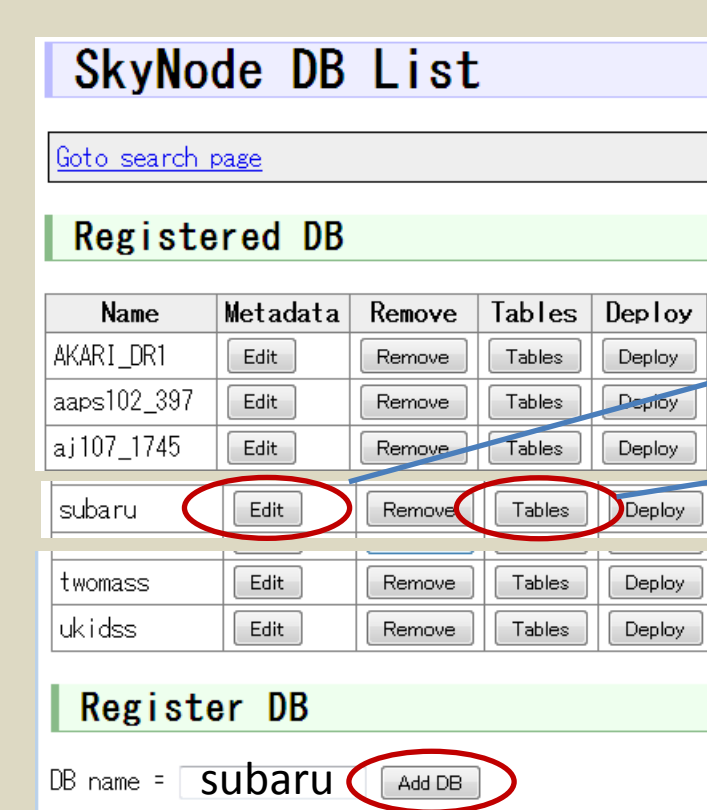


Figure 2. GUI for registering a database to metadata DB.

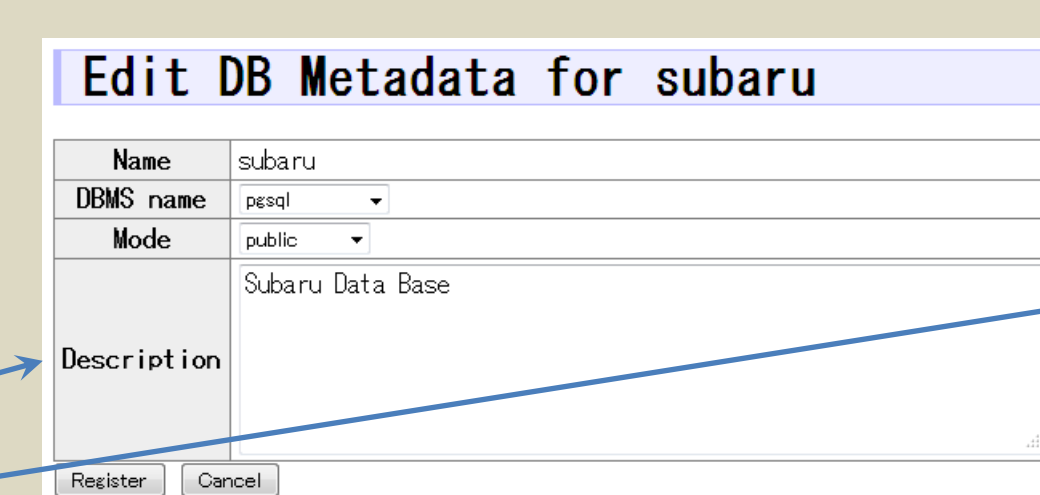


Figure 3. edit database access parameters and its description

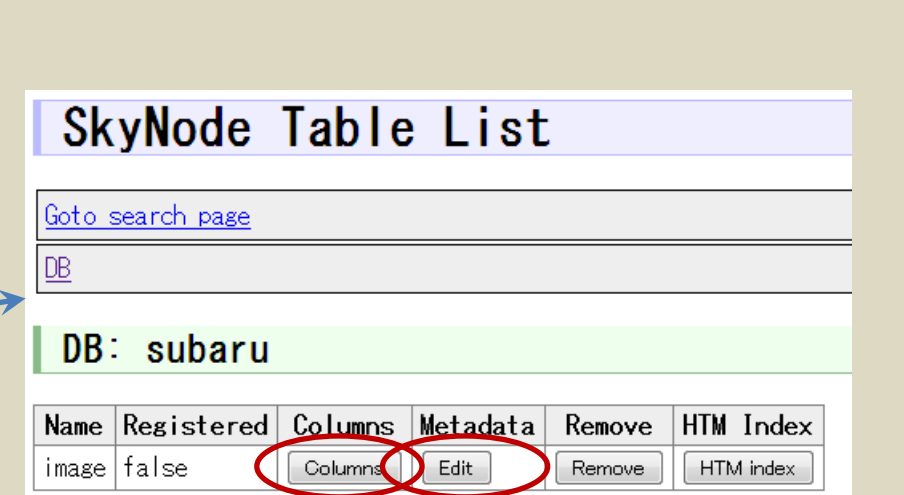


Figure 4. edit database access parameters and its description

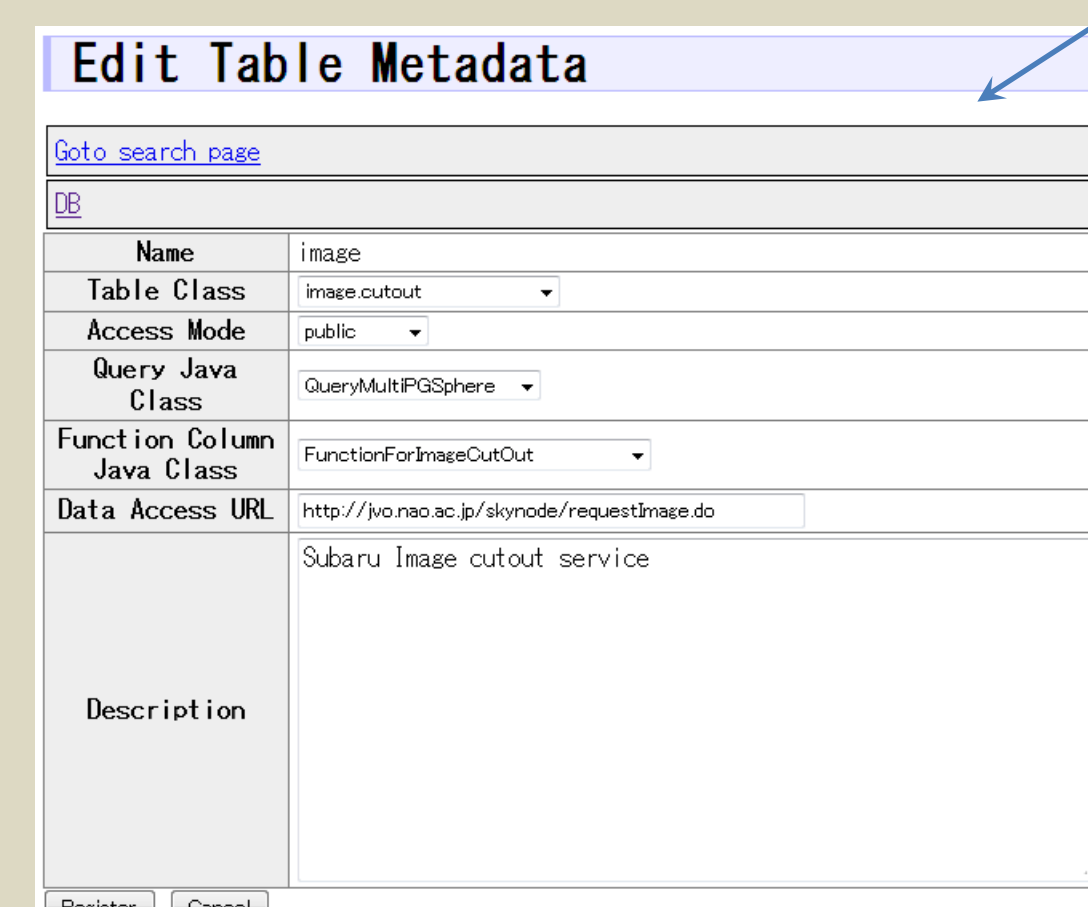


Figure 5. edit table metadata

name	registered	order	description	utype	unit	UO	data type
id	false	1		not selected			integer
data_id	false	2		not selected			varchar
title	false	3	image title	not selected		VOIRImageTitle	varchar
instrument	false	4	Instrument used to make the observation	not selected		INST_ID	varchar
date_obs	false	5	characteristic observation time (the mean of the observation time)	not selected		VOIRImageMDate	timestamp
band_name	false	6	bandname by name	not selected		VOIRBandPassID	varchar
band_refval	false	7	characteristic (reference) frequency, wavelength, or energy for the bandpass model	not selected	nm	VOIRBandPassRefv	double
band_hilimit	false	8	upper limit of the bandpass	not selected	nm	VOIRBandPassHil	double
band_lolimit	false	9	lower limit of the bandpass	not selected	nm	VOIRBandPassLol	double
band_unit	false	10	units used to represent bandpass values	not selected		VOIRBandPassUnit	varchar
maxis1	false	11		not selected			integer

Figure 6. edit column metadata