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VizieR TAP implementation feedback

Regular VizieR contents :

➜ 10,000 catalogues
➜ 20,000 tables
➜ 300,000 columns
➜ Data volumes
    ➜ ~60Gb in database (without large catalogues)
    ➜ ~1Tb of compressed binary files (outside DBMS)

The technology used

Storage system	PostgreSQL database (3.5Tb)
Position indexation	H3C (custom PostgreSQL lib + NASA HEALPix lib)
Parser/ADQL translator	Java library (G.Mantelet (CDS))
TAP	Java library (G.Mantelet (CDS))
Convert coordinate system	AS4 (F.Ochsenbein)

New database dedicated to TAP for VizieR :

➜ Database size : ~3.5Tb
➜ XML output of the (*reduced*) TAP schema : ~ 3.5 Mb
   ➜ FULL TAP schema ~86 Mb

Implementation progress in VizieR TAP beta version

🟢 Done
🟠 Partially done
🔴 To do

ADQL user-friendly web page : http://tapvizier.u-strasbg.fr/adql/
The TAP service entry point : http://tapvizier.u-strasbg.fr/TAPVizieR/tap/

🟢 Creation of a dedicated PostgreSQL database
🟢 Synchronization with the VizieR original database
🟢 Simple Web Page

🟠 Homogenization of the coordinate system in ICRS
   add computed columns in tables
🟠 The TAP interface is available
       with some adjustments
🔴 Upload

The TAPVizieR simple web page

Search Tables using the VizieR METAdata

the list resulting of the search process

The ADQL text area

The Results of your queries (using asynchronous mode)

Main issues and questions during implementation

➔ TAP Scalability

➔ Coordinate systems in ADQL

➔ Naming tables and columns
  ➔ User-readable vs native DB writing

➔ Additions
  ➔ Individual table schema details
  ➔ Coordinate conversions
  ➔ Searching capabilities
  ➔ Debugging

Scalability of the XML TAP schema for VizieR

➜ We deal with 20 000 tables, 300 000 columns !

➜ Volumetry needed :
  Entire description containing tables+columns (→ TAP compliant) : 86Mb
  without columns description : 3.5 Mb

➜ Most parsers will choke on too large a schema

➜ Proposed solution :
  ➜ Provide table descriptions without columns details
  ➜ Additional URL to retrieve column details for a table
    ➜ e.g. http:/tapvizier.u-strasbg.fr/TAPVizieR/tap/**tables/tablename**

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Managing coordinate systems

➔ Ambiguities between the parameter used in the function and the « real »
   database coordinate system

SELECT ....
FROM tyc2
WHERE 1=CONTAINS(POINT("FK4",ra_icrs_,de_icrs_), CIRCLE("ICRS", 0,0,2/60.)

TAP - compliant
➔ The columns (ra_icrs_,de_icrs_) are in « FK4 »
➔ A change of coordinate system is required by
  the CONTAINS function because
  « FK4 » != « ICRS »

TAPVizieR
➔ The columns (ra_icrs_,de_icrs_) are in « ICRS »
➔ The coordinate system « FK4 » is changed in
  the coordinate system defined by
  METAdata: → « ICRS »

Note : The Crossmatch case
if columns of tables are in an other coordinate system,TAPVizieR will make a change of
coordinate system

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Table and column names mapping

VizieR uses
- **User-friendly (logical) names : II/259/tyc2, VII/248, RA(ICRS), DE(ICRS)**
- **Internal DB names : tyc2, c7248vv06, ra_icrs_, de_icrs_**

name	DBname
II/259/tyc2	ty2

name	DBname
RA(ICRS)	ra_icrs_
DE(ICRS)	de_icrs_

SELECT ra_icrs_,de_icrs_ **FROM** tyc2 ;

At present, VizieR TAP exposes the internal DB table and column names.

Better to use logical names to identify tables and columns ?

Some additions available for VizieR : **(not described in /capabilities)**

➔ A search url : /tap/search?query=word
  → take advantage of VizieR METAdata (in particular position)

➔ A debug url : /tap/syntax?request=doQuery&query=SELECT....

```
<TAP>
   <INFO>generated by TAPVizieR</INFO>
   <INFO name="aqdl" value="SELECT cmc14,raj2000,dej2000 FROM cmc14
      WHERE  1=CONTAINS(POINT('FK4',raj2000,dej2000), CIRCLE('ICRS', 279, 38, 5/60.))"/>
   <INFO name="warning" value="Wrong coordinate system ADQL says FK4 and Database says FK5[1]"/>
   <INFO name="warning" value="Wrong coordinate system ADQL says FK4 and Database says FK5[1]"/>
   <INFO name="warning" value="Change the Coordinate system of 'FK4' for FK5[1]"/>
</TAP>
```