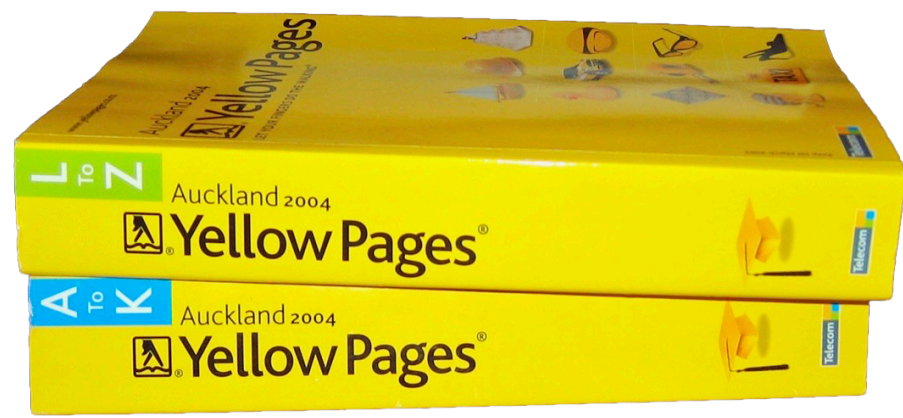




# ObsCore & Extensions: Registry

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# Registration of ObsCore Extension tables

## 1. Recommendation

Use a standard key like:

**ivo://ivoa.net/std/obsradio#table-1.0**

in the element <utype> of the <table> element describing the extension table, in the <schema> “ivoa” of the <tableset> of the <Resource> describing your data collection

NB: This standard key shall be defined in a StandardsRegExt resource

Element *utype*

Type

string: *xs:token*

Meaning

An identifier for a concept in a data model that the data in this table represent.

Occurrence

optional

Comment

The form of the utype string depends on the data model; common forms are sequences of dotted identifiers (e.g., in SSA) or URIs (e.g., in RegTAP).



International  
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VODataService: A VOResource Schema  
Extension for Describing Collections and  
Services

Version 1.3

IVOA Working Draft 2024-01-12

Working Group  
Registry

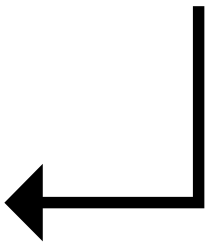
This version  
<https://www.ivoa.net/documents/VODataService/20240112>

Latest version  
<https://www.ivoa.net/documents/VODataService>

Previous versions  
REC-1.2  
PR-2021-02-23  
PR-2019-07-15  
WD-2018-10-26  
REC 1.1

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# Registration of ObsCore Extension tables

## 2. Example 1

Resource `ivo://jive.eu/__system__/obs-radio/obs_radio`

- type: **CatalogResource**
- Published on EVN Data Archive Publishing Registry
- Describe EVN Data Archive obs\_radio Table:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><div><div>ri:Resource "2021-11-11T13:00:00Z" EVN Data Archive obs_radio Table</div><div><div>title EVN Data Archive obs_radio Table</div><div>shortName ivoa.obs_radio</div><div>identifier ivo://jive.eu/__system__/obs-radio/obs_radio</div><div>curation Joint Institute for VLBI ERIC</div><div>content observational-astronomy</div><div>capability "ivo://ivoa.net/std/TAP#aux"</div><div>tableset<div>schema ivoa<div>name ivoa</div><div>title EVN Data Archive obs_radio Table</div><div>description Radio-specific metadata for suitable data products</div><div>table ivoa.obs_radio<div>name ivoa.obs_radio</div><div>description An IVOA-defined metadata table for radio measurements,</div><div>utype ivo://ivoa.net/std/obsradio#table-1.0</div><div>column obs_publisher_did</div><div>column s_resolution_min</div><div>column s_resolution_max</div><div>column s_fov_min</div><div>column s_fov_max</div><div>column s_maximum_angular_scale</div><div>column f_resolution</div><div>column t_exp_min</div><div>column t_exp_max</div><div>column t_exp_mean</div><div>column uv_distance_min</div><div>column uv_distance_max</div><div>column uv_distribution_ecc</div></div></div></div></div></div></div> | <div><div>1983</div><div>1984</div><div>1985</div><div>1986</div><div>1987</div><div>1988</div><div>1989</div><div>1990</div><div>1991</div><div>1992</div><div>1993</div><div>1994</div><div>1995</div><div>1996</div><div>1997</div><div>1998</div><div>1999</div><div>2000</div><div>2001</div><div>2002</div><div>2003</div><div>2004</div><div>2005</div><div>2006</div><div>2007</div><div>2008</div><div>2009</div><div>2010</div><div>2011</div><div>2012</div><div>2013</div></div> | <div><div>&lt;tableset&gt;</div><div>&lt;schema&gt;</div><div>&lt;name&gt;ivoa&lt;/name&gt;</div><div>&lt;title&gt;EVN Data Archive obs_radio Table&lt;/title&gt;</div><div>&lt;description&gt;Radio-specific metadata for suitable data products from EVN Data Archive's obscure table.&lt;/description&gt;</div><div>&lt;table&gt;</div><div>&lt;name&gt;ivoa.obs_radio&lt;/name&gt;</div><div>&lt;description&gt;An IVOA-defined metadata table for radio measurements, with extra metadata for interferometric measurements ("visibilities") as well as single-dish observations. You will almost always want to join this table to ivoa.obscore (do a natural join).&lt;/description&gt;</div><div>&lt;utype&gt;ivo://ivoa.net/std/obsradio#table-1.0&lt;/utype&gt;</div><div>&lt;column&gt;</div><div>&lt;name&gt;obs_publisher_did&lt;/name&gt;</div><div>&lt;description&gt;Dataset identifier assigned by the publisher.&lt;/description&gt;</div><div>&lt;ucd&gt;meta.ref.void&lt;/ucd&gt;</div><div>&lt;utype&gt;obscore:curation.publisherdid&lt;/utype&gt;</div><div>&lt;dataType&gt;arraysize="*" xsi:type="vs:VOTableType"&gt;char&lt;/dataType&gt;</div><div>&lt;flag&gt;indexed&lt;/flag&gt;</div><div>&lt;flag&gt;primary&lt;/flag&gt;</div><div>&lt;/column&gt;</div><div>&lt;column&gt;</div><div>&lt;name&gt;s_resolution_min&lt;/name&gt;</div><div>&lt;description&gt;Angular resolution, longest baseline and max frequency dependent&lt;/description&gt;</div><div>&lt;unit&gt;arcsec&lt;/unit&gt;</div><div>&lt;ucd&gt;pos.angResolution;stat.min&lt;/ucd&gt;</div><div>&lt;utype&gt;Char.SpatialAxis.Resolution.Bounds.Limits.LoLim&lt;/utype&gt;</div><div>&lt;dataType&gt;xsi:type="vs:VOTableType"&gt;float&lt;/dataType&gt;</div><div>&lt;flag&gt;nullable&lt;/flag&gt;</div></div> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



# Registration of ObsCore Extension tables

## 2. Example 2

Resource `ivo://jive.eu/tap`

- type: **CatalogService**
- Published on EVN Data Archive Publishing Registry
- Describe EVN Data Archive TAP Service:

```
▼ ● ri:Resource "2009-12-01T10:00:00Z" EVN Data Archive TAP service
  ● title EVN Data Archive TAP service
  ● shortName EVN TAP
  ● identifier ivo://jive.eu/tap
  > ● curation Joint Institute for VLBI ERIC
  > ● content virtual-observatories
  > ● capability "ivo://ivoa.net/std/TAP"
  > ● capability "ivo://ivoa.net/std/VOSI#availability"
  > ● capability "ivo://ivoa.net/std/VOSI#capabilities"
  > ● capability "ivo://ivoa.net/std/VOSI#tables"
  > ● coverage Radio
  ▼ ● tableset
    > ● schema evn
    ▼ ● schema ivoa
      ● name ivoa
      ● description Definition and support code for the ObsCore data
      ▼ ● table ivoa.obs_radio
        ● name ivoa.obs_radio
        ● description An IVOA-defined metadata table for radio mea
        ● utype ivo://ivoa.net/std/obsradio#table-1.0
        > ● column obs_publisher_id
        > ● column s_resolution_min
```

```
<schema>
  <name>ivoa</name>
  <description>Definition and support code for the ObsCore data model and
    table.</description>
  <table>
    <name>ivoa.obs_radio</name>
    <description>An IVOA-defined metadata table for radio measurements, with extra
      metadata for interferometric measurements ("visibilities") as well as single-dish
      observations. You will almost always want to join this table to ivoa.obscore (do a
      natural join).</description>
    <utype>ivo://ivoa.net/std/obsradio#table-1.0</utype>
    <column>
      <name>obs_publisher_id</name>
      <description>Dataset identifier assigned by the publisher.</description>
      <ucd>meta.ref.void</ucd>
      <utype>obscore:curation.publisherid</utype>
      <dataType arraysize="*" xsi:type="vs:VOTableType">char</dataType>
      <flag>indexed</flag>
      <flag>primary</flag>
    </column>
    <column>
```



# Discovery of ObsCore Extension tables with RegTAP

## 1. ADQL code for discovery of radio ObsCore Extensions tables in the registry:

```
SELECT DISTINCT
  table_name,
  access_url,
  res_type,
  ivo_id
FROM
  rr.res_table
NATURAL JOIN rr.capability
NATURAL JOIN rr.interface
NATURAL JOIN rr.resource
WHERE
  table_utype LIKE 'ivo://ivoa.net/std/obsradio#table-1.%'
  AND standard_id LIKE 'ivo://ivoa.net/std/tap%'
  AND intf_role = 'std'
  AND (res_type = 'vs:catalogresource' OR res_type = 'vs:catalogservice')
```

This query returns tables attached to 2 kinds of Resources, but only one is interesting for the use-case, hence the selection of ONLY res\_type='vs:catalogresource' in the next step.

res\_table(+) 1 X

SELECT DISTINCT table\_name, access\_url, res\_type | Enter a SQL expression to filter results (use Ctrl+Space)

|   | A-Z table_name | A-Z access_url                                                | A-Z res_type       | A-Z ivo_id                                       |
|---|----------------|---------------------------------------------------------------|--------------------|--------------------------------------------------|
| 1 | ivoa.obs_radio | <input checked="" type="checkbox"/> http://dc.g-vo.org/tap    | vs:catalogresource | ivo://org.gavo.dc/__system__/obs-radio/obs_radio |
| 2 | ivoa.obs_radio | <input checked="" type="checkbox"/> http://dc.g-vo.org/tap    | vs:catalogservice  | ivo://org.gavo.dc/tap                            |
| 3 | ivoa.obs_radio | <input checked="" type="checkbox"/> http://evn-vo.jive.eu/tap | vs:catalogresource | ivo://jive.eu/__system__/obs-radio/obs_radio     |
| 4 | ivoa.obs_radio | <input checked="" type="checkbox"/> http://evn-vo.jive.eu/tap | vs:catalogservice  | ivo://jive.eu/tap                                |

# Discovery of ObsCore Extension tables using pyvo.registry

## 1. Python code for discovery of radio ObsCore Extensions tables

```
2 import pyvo
3
4 class HasRadio(pyvo.registry.SubqueriedConstraint): 1 usage
5     def get_search_condition(self, service):
6         return ("ivoid IN (SELECT DISTINCT ivoid"
7                 " FROM rr.res_table"
8                 " NATURAL JOIN rr.resource"
9                 " WHERE table_ctype LIKE 'ivo://ivoa.net/std/obsradio#table-1.%'"
10                " AND res_type='vs:catalogresource')")
11
12 res_with_radio_tables=pyvo.registry.search(HasRadio())
13 print(res_with_radio_tables)
```



# Discovery of ObsCore Extension tables using pyvo.registry

## 2. Python code for querying resources found

```
15 from astropy.table import vstack
16
17 results = []
18 for res in res_with_radio_tables:
19     svc = res.get_service("tap")
20     print(f'Querying {svc.baseurl}')
21     svc_results = svc.run_async(
22         "SELECT TOP 10 t_min, s_resolution_min, access_url"
23         " FROM ivoa.obs_radio NATURAL JOIN ivoa.obscore").to_table()
24     print(svc_results)
25     results.append(svc_results)
26 union = vstack(results)
27 print(union)
```