

# taplint — TAP validation tool

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taplint

## TAP validation suite

- Usage:
  - ▷ Point it at your service, it tells you what's not compliant or looks questionable
  - ▷ Mainly intended for TAP service developers/operators
  - ▷ Can also be harnessed by automatic validation services
  - ▷ Hard to turn output into a single Pass/Fail flag
- Part of STILTS
  - ▷ Runs on the command line, output to stdout
- Tries to test lots of things
  - ▷ Many protocols involved:
    - TAP, UWS, VODataService, ADQL, VOResource, VOSI, TAPRegExt, DALI, VOTable, HTTP, ...
  - ▷ Performs ~ 200 *different* tests
  - ▷ ... but not comprehensive
- Developed since 2011 (started as part of GAVO-funded TAP client work)
- Much help/input from TAP people
- Has fed into discussions about TAP evolution

# Example

```
% stilts taplint http://example.com/tap
```

```
Section TMV: Validate table metadata against XML schema
```

```
I-TMV-VURL-1 Validating http://example.com/tap/tables against http://www.ivoa.net/xml/VODataService/VODataServ...
```

```
E-TMV-URBH-1 (1.2, c.178): cvc-elt.1: Cannot find the declaration of element 'vos:tableset'.
```

```
E-TMV-BBUE-1 (1.889, c.58): cvc-complex-type.2.2: Element 'dataType' must have no element [children], and the ...
```

```
E-TMV-BBUE-2 (1.893, c.58): cvc-complex-type.2.2: Element 'dataType' must have no element [children], and the ...
```

```
E-TMV-BBUE-3 (1.897, c.58): cvc-complex-type.2.2: Element 'dataType' must have no element [children], and the ...
```

```
E-TMV-BBUE-x (1817 more)
```

```
S-TMV-VALI-1 warnings: 0, errors: 1818, fatal: 0
```

```
Section TMS: Check content of tables metadata from TAP_SCHEMA
```

```
I-TMS-QSUB-1 Submitting query: SELECT principal, indexed, std, "size" FROM TAP_SCHEMA.columns
```

```
I-TMS-QGET-1 Query GET URL: http://example.com/tap/sync?REQUEST=doQuery&LANG=ADQL&QUERY=SELECT+principal%2C+in...
```

```
E-TMS-RRES-1 TAP response document RESOURCE element is not marked type='results'
```

```
E-TMS-CERR-1 Error reading TAP_SCHEMA.columns data [IllegalArgumentException: Column ["size"] does not exist.]
```

```
. . .
```

## Notes on output:

- Output intended to be read by humans
- Manageable length (repeated messages filtered out)
- *Tries* to give as much info as possible
- Logs queries as well as reporting errors where possible/practical to aid reproducibility
- Options available for truncating long lines, filtering messages, restricting tests, etc
- Programmatic use is also possible (output is `grep`-friendly, semi-public API exists)

# Tests

## Tests performed:

- TMV:** Validate /tables endpoint against VODataService schema
- TME:** Check content /tables endpoint for consistency
- TMS:** Check form and content of TAP\_SCHEMA tables
- TMC:** Compare table metadata from /tables and TAP\_SCHEMA
- CPV:** Validate /capabilities endpoint against TAPRegExt schema
- CAP:** Check content of /capabilities endpoint
- AVV:** Validate /availability endpoint against VOSI schema
- QGE:** Make example ADQL queries in sync GET mode
- QPO:** Make example ADQL queries in sync POST mode
- QAS:** Make example ADQL queries in async mode
- UWS:** Test asynchronous UWS/TAP behaviour
- MDQ:** Check table query result columns against declared metadata
- UPL:** Make example queries with table uploads
- OBS:** ObsCoreDM data model

# Capabilities

## Strengths:

- Job submission tests (synchronous, asynchronous, UWS job control)
- Tests all columns in all tables
- Metadata tests (consistency between TAP\_SCHEMA & /tables endpoint)
- Basic ADQL syntax and semantics (select columns, see if they are present and correct)
- TAPRegExt record tested if present
- Output VOTable syntax checked carefully (`votlint`)

## Weaknesses:

- Not very complicated ADQL queries (no geometry, no STC, ...)
- ADQL-like queries only (no PQL)
- Tests only service, not registration
- Can't be comprehensive
- Documentation/messages sometimes incomplete or inscrutable
- No doubt has bugs!

# Status

- Availability:

- Documentation:

- <http://www.starlink.ac.uk/stilts/sun256/taplint.html>

- (but some output may require explanation from me, or examining the [source code](#))

- Download:

- stable: <http://www.starlink.ac.uk/stilts/>

- latest: <ftp://andromeda.star.bris.ac.uk/pub/star/stilts/pre/stilts.jar>

- Under continuing development:

- ▷ Tracks evolution of TAP standards (and current interpretations of same)

- ▷ New tests as they occur to me

- ▷ Bug fixes

- Possibility of enhancements:

- ▷ New stages/tests (e.g. Examples, RegTAP, Geometry, Joins, Standard UDFs)?

- ▷ XML/HTML output?

- ▷ Web-based version?

- Feedback always welcome

# Summary

## STILTS `taplint`

- If you're developing a TAP service, consider using it!  
... ideally on a regular basis
- Talk to me if results don't make sense (or look wrong)