



# DAI Interfaces

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I/OA, May 2018, Victoria



# What are interfaces?

```
<vosi:capabilities
  xmlns:vosi="http://www.ivoa.net/xml/VOSICapabilities/v1.0"
  xmlns:vs="http://www.ivoa.net/xml/VODataService/v1.1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

  <capability standardID="ivo://ivoa.net/std/TAP">
    <interface xsi:type="vod:ParamHTTP" role="std">
      <accessURL use="base">http://example.com/tap</accessURL>
    </interface>
  </capability>

</vosi:capabilities>
```

## RegTAP 1.0 query to find TAP services

```
SELECT ivoid, access_url
FROM rr.capability
NATURAL JOIN rr.interface
WHERE standard_id like 'ivo://ivoa.net/std/tap%'
AND intf_type='vs:paramhttp'
```

# Interface evolution I -- the beginning

- General Standard ID
- No SecurityMethods
- For TAP 1.0: **/sync** and **/async** simply appended to accessURL

```
<capability standardID="ivo://ivoa.net/std/TAP">  
  <interface xsi:type="vod:ParamHTTP" role="std">  
    <accessURL use="base">http://example.com/tap</accessURL>  
  </interface>  
</capability>
```

# Interface evolution II -- Addition of securityMethods

```
<capability standardID="ivo://ivoa.net/std/TAP">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
  </interface>
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#tls-with-certificate"/>
  </interface>
</capability>
```

# Interface evolution III -- Multiple securityMethods

```
<capability standardID="ivo://ivoa.net/std/TAP">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
  </interface>
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
</capability>
```

# Interface evolution IV - multiple standard IDs

```
<capability standardID="ivo://ivoa.net/std/TAP#sync-1.1">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap/my-sync</accessURL>
  </interface>
</capability>
<capability standardID="ivo://ivoa.net/std/TAP#async-1.1">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap/my-async</accessURL>
  </interface>
</capability>
```

# All together

```
<capability standardID="ivo://ivoa.net/std/TAP#sync-1.1">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap/sync</accessURL>
  </interface>
</capability>
<capability standardID="ivo://ivoa.net/std/TAP#sync-1.1">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
</capability>
<capability standardID="ivo://ivoa.net/std/TAP#async-1.1">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap/sync</accessURL>
  </interface>
</capability>
<capability standardID="ivo://ivoa.net/std/TAP#async-1.1">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
</capability>
```



# Requirements of Interfaces

- For RegTAP searching. Trying to find all the URLs for some service.
- To convey the types of authentication methods supported
- To allow implementers to supply different URLs for each authentication method.
- To allow implementers to supply custom URLs for sync and async job execution

# How to end the chaos?

1. Add the condition 'where security-method is null' to RegTAP query
2. Restrict interface:securityMethod to 1:1
  - a. Need this to allow RegTAP clients to search for the interface with no security methods
  - b. Need this to disambiguate what existence of multiple securityMethods means
3. Revert to using only 1 standard ID for TAP
  - a. But how to allow implementers to use alternate URLs for sync and asyc?

# How to end the chaos (2)?

For TAP 1.0:

- Keep a version of the old-style interfaces for backwards compatibility.

For TAP 1.1:

- Tag interfaces with `uws:Sync` and `uws:Async` in interface type
- Add the version of the TAP service to the interface

# Interface evolution V - current recommendation

```
<capability standardID="ivo://ivoa.net/std/TAP">
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
  </interface>
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
  </interface>
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/sync</accessURL>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Async" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/sync</accessURL>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Async" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Async" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
</capability>
```

# TAP 1.0 Backwards Compatibility

```
<capability standardID="ivo://ivoa.net/std/TAP">  
  <interface xsi:type="vod:ParamHTTP" role="std">  
    <accessURL use="base">http://example.com/tap</accessURL>  
  </interface>  
</capability>
```

```
<interface xsi:type="vod:ParamHTTP" role="std">  
  <accessURL use="base">http://example.com/tap</accessURL>  
</interface>
```

```
<accessURL use="base">http://example.com/tap/async</accessURL>  
<securityMethod standardID="ivo://ivoa.net/sso#cookie"/>  
</interface>  
<interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Async" role="std" version="1.1">  
  <accessURL use="base">http://example.com/tap/sync</accessURL>  
</interface>  
<interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Async" role="std" version="1.1">  
  <accessURL use="base">http://example.com/tap/async</accessURL>  
  <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>  
</interface>  
<interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Async" role="std" version="1.1">  
  <accessURL use="base">http://example.com/tap/async</accessURL>  
  <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>  
</interface>  
</capability>
```

# TAP 1.1 Anonymous sync access Interface

```
<capability standardID="ivo://ivoa.net/std/TAP">
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
  </interface>
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
  </interface>
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/sync</accessURL>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
  </interface>
```

```
<interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0"
  xsi:type="uws:Sync" role="std" version="1.1">
  <accessURL use="base">http://example.com/tap/sync</accessURL>
</interface>
```

# TAP 1.1 Authenticated sync access Interface

```
<capability standardID="ivo://ivoa.net/std/TAP">
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
  </interface>
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
  </interface>
  <interface xsi:type="vod:ParamHTTP" role="std">
    <accessURL use="base">http://example.com/tap</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/sync</accessURL>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Sync" role="std" version="1.1">
    <accessURL use="base">http://example.com/tap/async</accessURL>
    <securityMethod standardID="ivo://ivoa.net/sso#cookie"/>
  </interface>
  <interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0" xsi:type="uws:Async" role="std" version="1.1">
```

```
<interface xmlns:uws="http://www.ivoa.net/xml/UWSRegExt/v1.0"
  xsi:type="uws:Sync" role="std" version="1.1">
  <accessURL use="base">http://example.com/tap/async</accessURL>
  <securityMethod standardID="ivo://ivoa.net/sso#OpenID"/>
</interface>
```

# Home for the UWS Registry Extension?

- Currently a working draft (about to be circulated)
- Needed (very) soon by TAP 1.1 which is nearing the end of RFC