

THE US NATIONAL VIRTUAL OBSERVATORY

VOSpace 2.0

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Initial thoughts

- RESTful version of VOSpace 1.1
 - no new functionality
- Identifiers
 - Map `vos://authority/resource/path` to `http://rest-endpoint/path`
- Security
 - use HTTPS with client authentication and valid (NVO, AG, etc.) X.509 certificate
- Faults
 - Use HTTP error codes
- Formal description
 - Attempt to use WADL

Resources and representations - I

- Nodes:

```
<node uri="ivo://..." xsi:type="vos:StructuredDataNode">
  <properties>
    <property uri="ivo://..." readonly="true"/>
  </properties>
  <views>
    <accepts>
      <view uri="ivo://..." />
    </accepts>
    <provides>
      <view uri="ivo://..." />
    </provides>
  </views>
  <capabilities>
    <capability uri="ivo://...">
      <endpoint>http://...</endpoint>
      <param uri="ivo://...">...</param>
    </capability>
  </capabilities/>
</node>
```

Resources and representations - II

- Transfers:

```
<transfer>  
  <direction>...</direction>  
  <view uri="ivo://..." />  
  <protocol uri="ivo://...">  
    <endpoint>http://...</endpoint>  
    <param uri="ivo://...">...</param>  
  </protocol>  
</transfer>
```
- Properties
- Views
- Protocols

Resources and representations - III

- Listings:

```
<listing>  
  <token>...</token>  
  <limit>...</limit>  
  <detail>min|max|properties</detail>  
  <matches>  
    <match>...</match>  
  </matches>  
  <nodes>  
    <node>...</node>  
  </nodes>  
</listing>
```

Operations – I

- Service metadata
 - getProperties
 - Request: HTTP GET (or HEAD) to <http://rest-endpoint/properties>
 - Response: 200, <properties>
 - getViews
 - Request: HTTP GET (or HEAD) to <http://rest-endpoint/views>
 - Response: 200, <views>
 - getProtocols
 - Request: HTTP GET (or HEAD) to <http://rest-endpoint/protocols>
 - Response: 200, <protocols>
- Creating and manipulating nodes
 - createNode
 - Request: HTTP PUT <node> to <http://rest-endpoint/path>
 - Response: 201, <node>
 - moveNode
 - Request: HTTP POST <transfer> to <http://rest-endpoint/path/transfers>
 - Response: 201, <node>
 - copyNode
 - Request: HTTP POST <transfer> to <http://rest-endpoint/path/transfers>
 - Response: 201, <node>
 - deleteNode
 - Request: HTTP DELETE to <http://rest-endpoint/path>
 - Response: 200
 - findNode
 - Request: HTTP POST <listing> to <http://rest-endpoint/listing>
 - Response: 202, <http://rest-endpoint/listing/id>
 - listNodes
 - Request: HTTP POST <listing> to <http://rest-endpoint/listing>
 - Response: 202, <http://rest-endpoint/listing/id>

Operations – II

- Accessing metadata
 - getNode
 - Request: HTTP GET to <http://rest-endpoint/path>
 - Response: 200, <node>
 - setNode
 - Request: HTTP POST <node> to <http://rest-endpoint/path> (/properties?)
 - Response: 200, <node>
- Transferring data
 - pushToVoSpace
 - Request: HTTP POST <transfer> to <http://rest-endpoint/path/transfers>
 - Response: 202, <http://rest-endpoint/path/transfers/id>
 - pushFromVoSpace
 - Request: HTTP POST <transfer> to <http://rest-endpoint/path/transfers>
 - Response: 202, <http://rest-endpoint/path/transfers/id>
 - pullToVoSpace
 - Request: HTTP POST <transfer> to <http://rest-endpoint/path/transfers>
 - Response: 202, <http://rest-endpoint/path/transfers/id>
 - pullFromVoSpace
 - Request: HTTP POST <transfer> to <http://rest-endpoint/path/transfers>
 - Response: 202, <http://rest-endpoint/path/transfers/id>

Example

- HTTP POST to <http://nvo.caltech.edu/vospace/myData/table123/transfers>:

```
<vost:transfer>  
  <direction>pullFromVoSpace</direction>  
  <vost:view uri="ivo://ivoa.net/vospace/core#votable"/>  
  <vost:protocol uri="ivo://ivoa.net/vospace/core#http-get"/>  
</vost:transfer>
```
- Service responds with
<http://nvo.caltech.edu/vospace/myData/table123/transfers/345-fed-454>
- HTTP GET to
<http://nvo.caltech.edu/vospace/myData/table123/transfer/345-fed-454> returns:

```
<vost:transfer>  
  <direction>pullFromVoSpace</direction>  
  <vost:view uri="ivo://ivoa.net/vospace/core#votable"/>  
  <vost:protocol uri="ivo://ivoa.net/vospace/core#http-get">  
    <vost:endpoint>http://nvo.caltech.edu:7777/79f45-3ab0-4de2-bd6c-ff016082fd</  
    vost:endpoint>  
  </vost:protocol>  
</vost:transfer>
```


What about WebDAV?

- WebDAV URIs are hierarchical