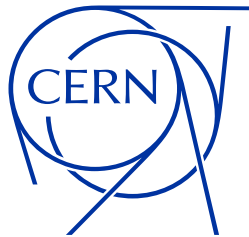


Token Support in Rucio 33

Dimitrios Christidis



Introduction

- Rucio already supported coarse-grained tokens since 2019
- Our approach and goals for fine-grained tokens are described in a [design document](#)
- Release 33* is an incremental step towards those goals
- Full-chain test already conducted successfully with ATLAS Rucio, the Pilot FTS instance, and three sites (with different storage implementations)

*Rucio 33.0.0 is scheduled to be released today

Workflows

- Third-party-copy transfer
- Deletion (central)

Token Procurement

- Use of a client ID/secret pair and the client credentials flow
- Only IAM and the WLCG profile are supported right now
- Caching to maximise reuse
 - Some limitations apply (e.g. multiple clusters, concurrent requests)

Audience Claim

- Lack of consensus on how storages should handle this claim
- Rucio will use the list of hostnames from the RSE protocols
- Alternatively, a configurable string (globally)
 - E.g. <https://wlcg.cern.ch/jwt/v1/any>

Scope Claim

- `storage.read` for TPC sources
- `storage.read` & `storage.modify` for TPC destinations and deletions
 - StoRM currently requires `storage.read` for stat operations
- FTS also requires `offline_access`
- Rucio will use the list of prefixes from the RSE protocols
 - May remove a base path, if configured

Estimated Token Request Rate

- How many tokens to satisfy all operations?
 - $(|\mathbf{RSEs}| \times 3 + 1) \times |\mathit{clusters}|$
 - *For each RSE, there are three possible scopes, plus one token for FTS authentication, times the number of clusters*
- The rate is approximately that number over the token lifetime (not controlled by Rucio)

Examples: FTS Authentication

```
{  
  "aud": "https://wlcg.cern.ch/jwt/v1/any",  
  "client_id": "01234567-89ab-cdef-0123-456789abcdef",  
  "exp": 1701805002,  
  "iat": 1701783402,  
  "iss": "https://atlas-auth.web.cern.ch/",  
  "jti": "XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX",  
  "nbf": 1701783402,  
  "scope": "fts",  
  "sub": "01234567-89ab-cdef-0123-456789abcdef",  
  "wlcg.ver": "1.0"  
}
```


Examples: RSE Configuration

Attributes:

=====

...

oidc_base_path: /eos/atlas
oidc_support: True

...

Protocols:

=====

davs

```
domains: '{"lan": {"read": 2, "write": 2, "delete": 2}, "wan": {"read": 2, "write": 2, "delete": 2, "third_party_copy_read": 1, "third_party_copy_write": 1}}'  
extended_attributes: None  
hostname: eosatlas.cern.ch  
impl: rucio.rse.protocols.gfal.Default  
port: 443  
prefix: /eos/atlas/atlasscratchdisk/rucio/  
scheme: davs
```

root

```
domains: '{"lan": {"read": 1, "write": 1, "delete": 1}, "wan": {"read": 1, "write": 1, "delete": 1, "third_party_copy_read": 2, "third_party_copy_write": 2}}'  
extended_attributes: None  
hostname: eosatlas.cern.ch  
impl: rucio.rse.protocols.gfal.Default  
port: 1094  
prefix: //eos/atlas/atlasscratchdisk/rucio/  
scheme: root
```

Examples: TPC Source

```
{  
  "aud": "eosatlas.cern.ch",  
  "client_id": "01234567-89ab-cdef-0123-456789abcdef",  
  "exp": 1701806246,  
  "iat": 1701784646,  
  "iss": "https://atlas-auth.web.cern.ch/",  
  "jti": "XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX",  
  "nbf": 1701784646,  
  "scope": "offline_access storage.read:/atlasscratchdisk/rucio/",  
  "sub": "01234567-89ab-cdef-0123-456789abcdef",  
  "wlcg.ver": "1.0"  
}
```

Examples: TPC Destination

```
{  
  "aud": "eosatlas.cern.ch",  
  "client_id": "01234567-89ab-cdef-0123-456789abcdef",  
  "exp": 1701806453,  
  "iat": 1701784853,  
  "iss": "https://atlas-auth.web.cern.ch/",  
  "jti": "XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXXXXXX",  
  "nbf": 1701784853,  
  "scope": "offline_access storage.modify:/atlasscratchdisk/rucio/  
storage.read:/atlasscratchdisk/rucio/",  
  "sub": "01234567-89ab-cdef-0123-456789abcdef",  
  "wlcg.ver": "1.0"  
}
```

Examples: Deletion

```
{  
  "aud": "eosatlas.cern.ch",  
  "client_id": "01234567-89ab-cdef-0123-456789abcdef",  
  "exp": 1701806830,  
  "iat": 1701785230,  
  "iss": "https://atlas-auth.web.cern.ch/",  
  "jti": "XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX",  
  "nbf": 1701785230,  
  "scope": "storage.modify:/atlasscratchdisk/rucio/  
storage.read:/atlasscratchdisk/rucio/",  
  "sub": "01234567-89ab-cdef-0123-456789abcdef",  
  "wlcg.ver": "1.0"  
}
```

Questions?