Cloud-based INSPIRE services

with the WFS 3.0 and GeoRocket

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Towards Cloud-based GIS
Big Geo Data – Challenges

1. High data volume
2. Complexity of geospatial processing algorithms
3. Improving accuracy and better coverage of modern devices
4. Growing demand to share data and to concurrently access or process it for various purposes

Yang et al. (2011)
OGC Web Feature Service 3.0

- Multiple parts; Part 1 (Core requirements class) is currently being drafted
- Follows REST architectural style
- Relies on standard HTTP operations (GET, POST, etc.)
OGC Web Feature Service 3.0

- Hypermedia as the engine of application state (HATEOAS)
- Follows OpenAPI 3.0 specification
- Supports multiple encodings (e.g. HTML, GeoJSON, GML Simple Features Profile Levels 0 and 2)
How to implement WFS 3.0 in the Cloud while addressing the challenges of Big Geo Data?
Importing/Exporting

- File
- Splitter
  - Chunk
  - Chunk
  - Chunk
  - Metadata
- Data store
- Indexer(s)
- Index
- Merger
  - Chunk
  - Chunk
General features

- Geospatial feature store
- Schema agnostic
- Format preserving
- Cloud-based
- Event-driven
- Easy to use/integrate
Interfaces

- Command Line Interface (CLI)
- HTTP interface (REST Maturity Level 2)
- Client API (Java)
- Server API (Java)
Queries

- Spatial queries
- Search by attribute
- Tags, properties and layers
- Logical operators (AND/OR/NOT)
- Comparison operators (EQ/LT/LTE/GT/GTE)
Back-ends

- File system (local or remote)
- MongoDB
- H2
- HDFS
- S3
WFS 3.0 Core requirements class

- Query feature collections:

  /collections
  /collections/{name}
  /collections/{name}/items
WFS 3.0 Core requirements class

› Query by feature ID / attribute / bbox / time:

/collections/{name}/items/{fid}
/collections/{name}/items?bbox=42,17,42.1,17.1

› Scrolling
Implementing WFS 3.0 with GeoRocket

Collections → Layers
Features → Chunks
Query by feature ID → Query by chunk ID
Query by bbox → Query by bbox
Implementing WFS 3.0 with GeoRocket

- Query by attribute
- Query by time
- Scrolling
Current state

May 2018  
First features already implemented

June 2018  
Implementation of all features of core requirements class / integration in hale

August 2018  
Release
Further information

GeoRocket website:
https://georocket.io

WFS 3.0 draft:
https://github.com/opengeospatial/WFS_FES

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