GeoWave

Spatiotemporal indexing and analysis

**Scalable Design:** By utilizing distributed computing clusters or in-memory data stores, GeoWave is fully capable of performing interactive time and/or location specific queries on datasets containing billions of features with 100 percent accuracy.

**Pluggable Backend:** GeoWave indexes multidimensional data in a way that ensures values close together in multidimensional space are stored physically close together in the datastore of your choice.

**Modular Framework:** GeoWave allows for easy feature extension and platform integration—bridging the gap between Big Data technologies and minimizing the learning curve for developers.

**Make Big Data work for you**

An open source collaboration project from the National Geospatial Intelligence Agency (NGA), GeoWave is intended to provide new opportunities for developers to:

- Manage large scale GEOINT datasets
- Retrieve interactive big data
- Analyze scalable data efficiently
- Effectively manage billions of spatiotemporal data points
- Store and retrieve observation data within government cloud environments

**Abilities and analytics**

- GeoWave preserves the locality of any number of bounded or unbounded dimensions
- Server-side fine grained filtering provides 100 percent accuracy with no significant loss of time
- Built-in analytics (k-means clustering, kernel density estimation, spatial joins, etc.)
- Uses spatial sub-sampling and distributed rendering to allow the visualization of unprecedented amounts of data
- Generic key structure allows GeoWave to ingest and process multiple datatypes in a single table
How GeoWave works

GeoWave uses tiered, gridded, Space Filling Curves (SFCs) to index data into your desired key-value store. The indexing information is stored in a generic key structure which can also be used for server-side processing. This architecture allows query, processing and rendering times to be reduced by multiple orders of magnitude.

Compatible backend data stores:
- Apache Accumulo
- Apache HBase
- Google Cloud’s BigTable
- Apache Cassandra
- Amazon’s DynamoDB
- Redis
- RocksDB
- Apache Kudu (Initial Support)

Popular integrated frameworks:
- MrGeo
- PDAL
- Apache Spark
- Apache Kafka
- Mapnik
- GeoServer
- Apache Hadoop
- GeoTrellis
- Jupyter
- Apache Zeppelin

Specifications:
- Java Based
- Full featured command line support
- Support for Spark and Hadoop MapReduce jobs
- Native support for large variety of feature types/formats
- Easily extensible to support new formats and use cases

For more information about GeoWave, contact DL-GEOWAVE@radiantsolutions.com