Securing INSPIREd geodata cloud services with CLARUS

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Abstract

Moving spatial data infrastructures to the cloud can bring considerable benefits regarding scalability, performance and cost-effectiveness. However some geospatial data are sensitive (for public security matters or for commercial reasons) and their exploitation in the cloud raises security issues. Thus, geodata providers are often reluctant to "move to the cloud", due to the perceived threats on data security, user control on their data, and data location. This is notably the case for European geosurvey organisations whose mission includes the management of sensitive environmental data, beside the legal obligations to share public data to a large audience.

We present here CLARUS, a research project on (geo)data protection in the cloud that has received fundings from the European Union's Horizon 2020 programme. CLARUS aims to provide a solution for storing and processing encrypted/protected geodata in the cloud, in the context of honest-but-curious cloud service providers (CSP). CLARUS mainly comprises a proxy running in the user-trusted area, able to intercept data exchanges between the end-user and the cloud and to apply the most appropriate security technique. Depending on the use case, the system proposes different techniques for securely outsourcing data to the cloud (e.g. protecting geographical features thanks to distributed data splitting among different CSPs, performing geostatistical computation on encrypted values, cloaking the precise location of objects to non-authorised parties, etc.)

The CLARUS proxy, providing support for geodatabase protocols and INSPIRE/OGC web services, could be associated to most of the spatial data infrastructures in the cloud. We therefore believe that it will meet the expectations of geodata providers wishing to retain control of their outsourced data without impairing the functionality and cost-saving benefits of cloud services.

Categories

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