IFB Cloud and Digital Services for Life Sciences

Abstract

The Institut Français de Bioinformatique (IFB)[1] is a national service infrastructure that offers the life sciences and bioinformatics communities, access to resources critical to their research, support for projects at the highest level of expertise, and the opportunity to participate in ambitious projects at the national and international level. To face these challenges, IFB organized the services through decentralization of physical, logistics and human resources. IFB has deployed a national distributed bioinformatics infrastructure accessible to the life sciences research community. This infrastructure includes all the hardware contributing to ensure the service offer (with more than 27,000 CPU-threads and 130 TB of RAM), and provides complementary digital services in cluster and cloud computing modes.

Regarding the cloud services, IFB has set up a federation of clouds named Biosphere [2], which relies on interconnected IT infrastructures of the IFB hub and several regional platforms. The resources are distributed across 8 cloud sites providing in total more than 10,000 vCPU and 43 TB of RAM. IFB-Biosphere provides multi-cloud services to increase the availability of cloud resources, to propose larger CPU resources or different hardwares (GPU, big memory, high-frequency CPU), or to use different data sources.

The cloud federation offers a set of pre-defined scientific environments, allowing scientists and bioinformaticians to choose the tools configuration best suited to their analyses. These virtual bioinformatics environment models are developed by members of the IFB community and publicly available in the Biosphere catalogue RAINBio [3]. Scientists and engineers can launch their own virtual environments with dedicated resources that can be adapted to their own needs without interfering with other users. Biosphere is used for scientific production in the life sciences, developments, and to support events like scientific training and schools, university courses, hackathons or workshops.

References

1. https://www.france-bioinformatique.fr/

2. https://biosphere.france-bioinformatique.fr

3. https://biosphere.france-bioinformatique.fr/catalogue