

VSC Tier-1 Cloud Typical use cases

https://www.vscentrum.be/cloud

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VLAAMS SUPERCOMPUTER CENTRUM

Innovative Computing for A Smarter Flanders

vscentrum.be

Vlaams Supercomputer Centrum (VSC)

- Partnership 5 Flemish university associations, managed by FWO
- Aim:
 - bring together know-how in scientific computing in Flanders
 - encourage use by providing infrastructure, training and services
 - promote its importance and added value to society
- Leverage R&D
 - for academic researchers and research institutes (free of charge)
 - for researchers in industry (pay what you use, free exploratory)
- Partner in Belgian EuroHPC Competence Center, focusing on HPC, HPDA and AI





Tier-1 Supercomputing as a Service



Tier-1 Cloud

- 'Platform as a Service' for power users to deploy resources for scientific / R&D use case *virtual machines, storage systems, private/public networks, ...*
- Deployed with Red Hat OpenStack Platform 16.2 (Train)
- Supported by VSC team and Red Hat
- High availability setup on single site
- Public dashboard & APIs: <u>https://cloud.vscentrum.be</u>
- Features repurposed VSC Tier-1 HPC components + new dedicated hardware oversubscription 1:1 – 4:1





Tier-1 Cloud Hardware

9 UPSv1 hypervisors

- AMD Epyc 7542 2.9GHz
- 128 Cores
- 512 GB RAM
- Connected to UPS
- 25 Gb ethernet

67 CPUv1 hypervisors (older nodes)

- Intel Xeon CPU E5-2670 2.60GHz
- 16 Cores
- 128 GB RAM
- 10 Gb ethernet

9 GPUv1 hypervisors

- AMD Epyc 7542 2.9GHz
- 128 Cores
- 512 GB RAM
- 2 NVIDIA Tesla 4
- Connected to UPS
- 25 Gb ethernet

145 TB usable storage volume, based on RedHat Ceph

One public IP per project

Various VM images, flavours and instance types







Tier-1 Cloud – Getting Access

https://www.vscentrum.be/cloud

	Academic researchers		Industry/SME researchers	
Access model	Starting Grant (<i>lightweight</i>)	Project access (evaluation & selection)	Exploratory	Contract
Price	Free of charge	Free of charge	Free of charge	Full cost
Duration	4 months	Up to 2 years	4 months	Contract duration

- 3 project calls per year Cut-offs in 2022: 7 Feb, 7 June, 3 Oct
- Results from calls, so far (started June 2021):
 - 4 starting grants13 academic projects1 exploratory projectnegotiating 1 industry contract



mail <u>cloud@vscentrum.be</u> for pricing info

Tier-1 Cloud – Analysis



Tier-1 Cloud – Analysis

- Typical use cases:
 - User interface (web) \rightarrow data analytics tool (database) \rightarrow custom calculations (compute)
 - Web-based data management platform
 - Interactive prototyping environment
 - Teaching purposes dedicated VMs for students
- Target audience
 - Researchers within project (purpose = ease of use)
 - Broad audience researchers (purpose = service delivery)
 - Students





VLIZ – Lifewatch Data Cloud

Tier-1 Cloud – Example use cases







VUB – b2bTools: online predictions for protein biophysical features and their conservation







VUB – Social media and news outlets as a source for understanding the spatial distribution and intensity of natural hazard events on a global scale

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Tier-1 Cloud – Example use cases



SUPERCOMPUTER

CENTRUM

usegalaxy.be

Collaboration with usegalaxy.eu and EOSC-Life

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Goal: provide an **analysis portal** (with associated compute resources) with a **user-friendly** interface to enable researchers to perform **data-intensive analyses** without the need of advanced computer science skills

MetaboAnalyst

Click a	nodule to proceed, or scroll down	for more details:			
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Goal: dedicated user interface for metabolomics analysis, with adaptations compared to the online provided version by the authors to allow longer sessions

fairdomhub.be

grant proposal,	Sub-project, Experimental design Techniques, methods, single publication,
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Dashboard	
You can create a project	You can explore projects
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My Recent Contributions	

Goal: provide a portal for data management during and after a project. Main focus of development on the interface to the end-user and integration in the daily work practices. This will result in data that is 'FAIR-by-design' rather than made FAIR after the facts

VIB – UseGalaxy.be: The Belgian Galaxy instance & DataHub: A Research Data Management Platform for Life Sciences



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