

D3.5 Periodical assessment of Infrastructure services

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Deliverable Abstract

The report provides assessment and statistics of all the Infrastructure services provided under virtual access in WP3.



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TERMINOLOGY

https://confluence.egi.eu/display/EGIG

Terminology/Acronym	Definition
VA	Virtual Access
EOSC	European Open Science Cloud
laaS	Infrastructure as a Service

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Executive summary

This report provides an assessment at M30 of the WP3 installations provided by the EGI-ACE project under the Virtual Access (VA) mechanism. This assessment is based on the metrics collected by the 36 WP3 installations during the project duration in six, 6 months periods: M01-M05, M06-M10, M11-M15, M15-M20, M20-M25, M25-M30.

WP3 installations can be classified in two groups:

- Infrastructure providers that deliver computing and storage resources via Cloud or HTC interfaces. 16 different providers support 33 installations in this group. There is at least one installation delivering computing resources (CPU) per provider. Several providers count with dedicated installations for delivering storage resources and specialised GPU resources.
- Enabling components that support the Cloud Compute service of the previous group. These installations are: AppDB, for resource discovery and software catalogue; Dynamic-DNS for user-managed DNS provision of domain names for VMs and services running on the e-Infrastructure; Infrastructure Manager (IM) for application orchestration in the cloud resources.

The total capacity requested by (allocated for) the engaged communities exceeds 222 million CPU hours. In the project, WP3 budgeted ~72 million CPU hours (including 3 million CPU hours in HTC resources), ~285,000 GPU hours and ~28,000 TB month, therefore the support for communities in the project uses a combination of VA alongside project-based and pay-for-use funding. WP3 has focused on the support to new communities to be served with VA assigning these communities to the providers that are more likely to sustain the funding via existing local arrangements, projects or pay-for-use models. After the first period of the project, WP3 performed a deep analysis of the use cases and available capacity and adjusted the number of units available to each provider to match the capacity needs trends from the use cases and to avoid under-utilisation of some of the installations.

To promote the uptake of new and existing WP3 installations, beside the Webinar programme organized by the project, dedicated presentations have been organized at several events (EGI-ACE organised and externally organised), where services were presented. These activities are reported in Section 3.

Section 4 finally describes the level of satisfaction by checking the orders received via the EOSC portal and the EGI Customer satisfaction reviews, which showed an average level of 4.63 out of 5 during the reference period.

1 Introduction

Virtual Access (VA) is financial instruments to reimburse the access provisioning costs to access providers. This instrument is provided by the European Commission to increase the sharing of research infrastructures and services that otherwise would not be available to international user groups.

In VA, the services – also called "installations" – must be made available 'free of charge at the point of use' for European or International researchers. VA access is open and free access to services through communication networks to resources needed for research, without selecting the researchers to whom access is provided.

Virtual Access to services of the EGI-ACE catalogue applies to the following four categories:

- Infrastructure Services WP3 the Cloud Compute (IaaS) and High Throughput Compute services of the EGI portfolio supported by a set of 16 datacentres from the EGI Federation. The enabling components that support the Cloud Compute service: AppDB, for resource discovery and software catalogue; Dynamic DNS, for usermanaged DNS provision of domain names for VMs and services running on the e-Infrastructure; and Infrastructure Manager (IM) for the basic orchestration of IaaS resources.
- 2. Platform Services WP4 mature software tools offering generic capabilities to facilitate the usage of the underlying infrastructure for EOSC users and Data Spaces.
- Federated data spaces WP5 services provided by major European research collaborations, research infrastructures and research institutes, and are composed of mature software tools, datasets and services that offer science discipline specific processing and data analysis capabilities for EOSC users.
- 4. Federated Access Services WP6 services providing secure access to other services and enabling large-data analysis workloads in the distributed infrastructure. Included services are delivered by major European research institutions using mature open-source software with already established user communities from multiple scientific disciplines.

This document provides Virtual Access metrics and assessment for WP3.

1.1 Installations

Within EGI-ACE project 36 installations are part of Virtual Access work package 3. These installations support the baseline computing infrastructure of EGI-ACE as part of the following services:

 EGI Cloud Compute, EGI Cloud Container Compute and EGI Online Storage, supported by 31 installations: AppDB, MetaCentrumCloud - CPU, MetaCentrumCloud - GPU, MetaCentrumCloud - Storage, SCAI FedCloud v2, EGI -GSIOS, IN2P3-IRES-CPU, IN2P3-IRES-Storage, TR-FC1-ULAKBIM - CPU, TR-FC1-ULAKBIM-Storage, INFN-BARI-CPU, INFN-BARI-Storage, INFN-CNAF-CPU, INFN-CNAF-GPU, INFN-CNAF-Storage, INCD-Lisbon (NCG)-CPU, INCD-Lisbon (NCG)-Storage, EGI-IISAS-CPU, EGI-IISAS-GPU, DESY-FedCloud, CESGA-CPU, CESGA-Storage, IFCA-LCG2-CPU, IFCA-LCG2-Storage, INCD-LIP-CPU, INCD- LIP-Storage, CYFRONET-CLOUD-CPU, CYFRONET-CLOUD-Storage, CLOUDIFIN-CPU, and CLOUDIFIN-Storage. Providers of these installations are listed as such in the EGI Cloud Compute entry of the EOSC Marketplace¹;

- EGI High Throughput Compute, supported by 3 installations at SURF: dCache, Spider Storage, Data Processing Compute. SURF is listed as provider in the EGI High Throughput Compute entry of the EOSC Marketplace²;
- Infrastructure Manager³, supported by IM installation; and
- Dynamic DNS⁴, supported by the DynDNS installation.

Several installations were subject to change to adjust the available capacity to the existing use cases. In general the use cases were using less storage as originally anticipated during project preparation. Therefore the storage units were reduced and the CPU increased to accommodate more use cases within the available providers, except in the case of SURF, which supported use cases that had higher storage capacity needs. The IICT-BAS installations were removed as the provider didn't succeed with the integration in the federation. A new installation at IISAS (EGI-IISAS-GPU) was created to support more GPU use cases. The changes are summarised in the following table:

Installation	Original units	New units	Changes
INCD-Lisbon (NCG)-CPU	3,066,000	5,268,173	Transfer Storage to CPU hours to meet the demand from users
INCD-Lisbon (NCG)- Storage	2,450	613	
INFN-BARI-CPU	4,380,000	7,498,695	Transfer Storage to CPU hours to
INFN-BARI-Storage	1,650	335	meet the demand from users
INFN-CNAF-GPU	43,800	55,173	Transfer Storage to GPU hours to
INFN-CNAF-Storage	4,950	1,776	meet the demand from users
dCache	2,520	5,078	Transfer CPU to Storage to meet the
Spider Storage	3,480	5,547	demand from users
Data Processing Compute	5,500,000	3,025,000	
CLOUDIFIN-CPU	5,000,000	6,900,000	Transfer Storage to CPU hours to meet
CLOUDIFIN-Storage	3,600	180	the demand from users
IFCA-LCG2-CPU	2,500,000	3,369,149	Transfer Storage to CPU hours to meet
IFCA-LCG2-Storage	1,800	90	the demand from users
CESGA-CPU	4,500,000	4,770,000	Transfer Storage to CPU hours to meet
CESGA-Storage	950	665	the demand from users
EGI-IISAS-CPU	6,132,000	3,066,000	Create new GPU installation to cover

Table 1Changes in the installations

¹ <u>https://marketplace.eosc-portal.eu/services/egi-cloud-compute</u>

² <u>https://marketplace.eosc-portal.eu/services/egi-high-throughput-compute</u>

³ <u>https://marketplace.eosc-portal.eu/services/infrastructure-manager-im</u>

⁴ https://marketplace.eosc-portal.eu/services/dynamic-dns-service

EGI-IISAS-GPU	0	25,920	AI/ML use cases
IN2P3-IRES-Storage	4,200	1,680	Removed storage units as uptake was not enough to consume them during the remaining project time
EGI - GSIOS	2,000,000	€1,000,000	Removed CPU units as uptake was not enough to consume them during the remaining project time
IICT-BAS-CPU	7,700,000	0	Removed installations as provider did
IICT-BAS-Storage	270	0	not integrate

The installations of EGI Cloud Compute, EGI Cloud Compute and EGI Online Storage have supported a total of 69 communities (aka called Virtual Organisations, or VOs in short) with Virtual Access. Out of the 68 VOs, 13 support the WP5 Thematic Services, 4 support the Early Adopters from WP2 and 4 support Long Tail of Science and piloting, i.e., they support individual users requesting access via the EGI or EOSC marketplace or support general training and piloting activities. The remaining 24 support new use cases that have reached the project through the Open Calls, the EOSC DIH activities or other EOSC-related project activities (e.g. use cases from EOSC-Future).

The following tables summarise the VA consumption over the whole project for those installations delivering computing and storage resources under WP3. Table 3 shows for those installations delivering CPU resources, the number of units allocated in the project under VA (CPU hours), the requested capacity by use cases in EGI-ACE, the consumption of the available units at M15 and at M30, the total delivered capacity (beyond the available VA budget) and the percentage of VA that was consumed at the end of the project. At M30 a total of 67,916,000 CPU hours have been delivered, with most of the providers reaching 100% of their available capacity. Overall, the providers included in WP3 delivered 93,268,065 to support EGI-ACE use cases, adding more than 20 million CPU hours relying on local funds that complement the project contribution.

Installation	VA units available	Requested units from use cases	VA at M15	VA at M3o	Total Delivered capacity	% VA usage
DESY-FedCloud	2,000,000	2,738,688	21,070	1,721,401	1,721,401	86.07%
SCAI FedCloud v2	2,000,000	6,470,916	0	755,591	755,591	37.78%
EGI - GSIOS	1,000,000	1,122,288	75,054	1,087,282	1,087,282	100.00%
EGI-IISAS-CPU	3,066,000	3,778,762	943,417	2,970,848	2,970,848	96.90%
INCD-Lisbon (NCG)- CPU	5,268,173	8,157,816	1,888,486	3,066,000	5,429,234	100.00%
INFN-BARI-CPU	7,498,695	8,157,816	3,415,880	4,380,000	12,382,629	100.00%
INFN-CNAF-CPU	4,380,000	4,943,275	520,426	4,380,000	4,669,054	100.00%
Data Processing Compute	3,025,000	5,083,330	22,505	2,693,715	2,693,715	89.05%

Table 2VA CPU Consumption

TR-FC1-ULAKBIM - CPU	6,132,000	9,782,832	2,264,105	5,665,616	5,665,616	92.39%
MetaCentrumCloud - CPU	8,760,000	19,286,736	1,570,581	8,760,000	14,745,303	100.00%
IN2P3-IRES-CPU	6,132,000	3,050,280	737,500	6,132,000	7,043,031	100.00%
CLOUDIFIN-CPU	6,900,000	5,513,760	2,451,907	5,000,000	8,286,718	100.00%
CYFRONET-CLOUD- CPU	8,500,000	2,953,738	207,305	8,500,000	8,764,958	100.00%
IFCA-LCG2-CPU	3,369,149	9,705,848	4,314,449	2,500,000	11,088,639	100.00%
CESGA-CPU	4,770,000	10,883,560	1,319,781	4,500,000	5,964,046	100.00%
TOTALS	72,801,017	101,629,645	19,752,4 66	67,916,000	93,268,065	

Figure 1 shows the total delivered capacity (in blue columns) and the target capacity funded by VA for all the CPU providers of WP3.



Figure 1. VA CPU Consumption

Table 4 shows GPU usage. Similarly to the CPU consumption, the table shows the installation name, the number of units allocated in the project under VA (GPU node hours), the consumption of those units at M15, the consumption at M30, the total delivered capacity and the percentage of the VA consumption over the total units available. After the promotion campaigns, the usage of GPUs increased in the infrastructure and the two providers available since the start of the project reached 100% of the VA capacity available, with additional local funds supporting the usage from the project. A new installation was added

to support new use cases. This installation was made available from M19 onwards and managed to reach 92% of the available. Figure 2 depicts the total delivered capacity (in blue columns) and the target capacity funded by VA for all the GPU providers of WP3.

Installation	VA units available	VA at M15	VA at M30	Total ivered capacity	% VA usage
MetaCentrumCloud - GPU	204,400	20,448	243,038	243,038	100%
INFN-CNAF-GPU	55,173	8,765	55,173	66,601	100%
EGI-IISAS-GPU	25,920	n/a	23,937	23,937	92.35%
TOTALS	274,120	29,213	274,120	333,576	

Table 3VA GPU Consumption



Figure 2VA GPU Consumption

Storage usage is summarised in Table 5. Again, the table shows the installation name, the number of units allocated in the project under VA (TB months), the consumption of those units at M15, the consumption at M30, the total delivered capacity and the percentage of the VA consumption over the total units available. The overall usage of storage resources in the project was low at M15, although thanks to the redistribution of units and the push for use cases to consume storage resources, most of the providers met the target capacity. Figure 3 depicts the total delivered capacity (in blue columns) and the target capacity funded by VA for the storage providers of WP3.

Installation	VA units available	VA at M15	VA at M30	Total Delivered capacity	% VA usage
INCD-Lisbon (NCG)- Storage	613	200	639	639	100.00%
INFN-BARI-Storage	335	616	1,650	2,443	100.00%
INFN-CNAF-Storage	1,776	218	1,936	1,936	100.00%
dCache	5,078	1500	2,520	4,852	95.55%

Table 4Storage VA Consumption

Spider Storage	5,547	750	3,480	4,946	89.17%
TR-FC1-ULAKBIM - Storage	4,200	1,314	4,200	6,597	100.00%
MetaCentrumCloud - Storage	6,500	25	4,493	4,493	69.12%
IN2P3-IRES-Storage	1,680	25	2,740	2,740	100.00%
CLOUDIFIN-Storage	180	18	108	108	60.00%
CYFRONET-CLOUD- Storage	1,800	1.2	1,785	1,785	99.18%
IFCA-LCG2-Storage	90	25	77	77	85.56%
CESGA-Storage	665	0	238	238	35.79%
TOTALS	28,464	4692.2	30,855	30,855	





Figure 3VA Storage Consumption

1.2 Metrics definition

For each installation several metrics has been defined between the provider and WP6 leader, taking into account following categories:

- Number of users depending on the nature of installation, number could be defined based on accounts (if registration was required) or number of unique IPs (if registration is not needed to benefit of the service)
- **Usage** the goal of this metric is to report how much the service is used. This metric depended on functionality provided by the service.

- Number and names of the countries reached the goal of this metric was to report how broadly the service is used and how the geographical coverage is changing with time.
- Marketplace orders the goal of this metric is to provide information about how often the service is being ordered via EOSC Portal. This metric is not applicable to federation services due to the nature of the service. Federation services are enabling federation and are supporting delivery of customer facing services. Thus, cannot be ordered.

Installations

2.1 EGI - IM

Description	IM is a tool that eases the access and the usability of IaaS clouds by automating the VMI selection, deployment, configuration, software installation, monitoring and update of Virtual Appliances. It supports APIs from a large number of virtual platforms, making user applications cloud-agnostic. In addition it integrates a contextualization system to enable the installation and configuration of all the user required applications providing the user with a fully functional infrastructure.
Task	3.1
URL	https://appsgrycap.i3m.upv.es:31443/im/
Service Category	Infrastructure service
Service Catalogue	https://appsgrycap.i3m.upv.es:31443/im/
Location	The service is located in the premises of the GRyCAP (High Performance and Grid Computing Group) of the Institute of Instrumentation for Molecular Imaging of the Universitat Politècnica de València.
Duration	M1-M30
Modality of access	Access is freely available to any user. Also users who provided valid EGI check-in credentials.
	* Documentation: https://imdocs.readthedocs.io/en/latest/
Support offered	* Sample videos: <u>https://www.youtube.com/playlist?list=PLgPH186Qwh_37AMhEruhVKZSfoYpHkrUp</u>
	* IM service Source repository: <u>https://github.com/grycap/im/</u>
	* IM web portal Source repository: <u>https://github.com/grycap/im-web/</u>

	* IM client Source repository: <u>https://github.com/grycap/im-client/</u> * IM dashboard Source repository: <u>https://github.com/grycap/im-dashboard/</u>
Operational since	May 2018.
User definition	Any user with access to any Cloud platform that wants to deploy virtual infrastructures.

2.1.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users per quarter	10	Internal service database	90	123	70	192	163	55
No of infrastructures deployed per quarter	40	Internal logs	265	161	101	579	552	1,168
No of countries reach	3	Check-in	13	9	12	18	34	22
Names of countries reach	Spain, Italy, Portugal	Check-in	Spain, Germany, Czechia, Italy, Hungary, Netherlands, Poland, Portugal. Slovakia. Brazil, Indonesia, Russia, USA	Spain, United Kingdom, Germany, Czechia, Italy, India, Portugal. Slovakia, Romania.	Spain, Italy, United Kingdom, Czechia, Germany, France, Hungary, Netherlands, Poland, Slovakia, Norway, Indonesia	Spain, Italy, Greece, France, Norway, United Kingdom, Germany, Czechia, Austria, Romania, Switzerland, Hungary, Netherlands, Poland, Portugal, Slovenia, Sweden, Ukrania	Spain, Italy, France, Germany, Czechia, Greece, Norway, Romania, Canada, Hungary, Slovakia, Ecuador, Portugal, Switzerland, United Kingdom, China, Japan, Poland, Saudi Arabia, Austria, Belgium, Brazil, Estonia, Finland,	Argentina, Belgium, Czechia, Ecuador, France, Germany, Greece, Italy, Netherlands, Norway, Poland, Portugal, Romania, Saudi Arabia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United

			Guatemala, India,	States,
			Israel, Malaysia,	
			Netherlands,	
			Philippines, Réunion,	
			United Arab Emirates,	
			United States,	
			Argentina	
			-	

2.1.2 Assessment

The IM installation provides VM orchestration in the EGI Federated Cloud via API and web dashboard. The service grew during the 30 months of EGI-ACE, going from 10 users to a maximum of 192 users per quarter during period 5 (M21-M25) with a broad geographical coverage. These users have deployed 1,168 infrastructures per quarter in the last period (from 40 infrastructures per quarter of the baseline). The installation is used internally by several services of the EGI-ACE EOSC Compute Platform: EC3, PaaS Orchestrator, DODAS, and AppDB rely on IM for the management of VMs on the infrastructure. IM is also actively used by new communities of EGI-ACE from the open calls, WP5 Data Spaces and individual users.

The service was available in the EOSC Marketplace as a service from UPV (the provider of the service) and during the project it became part of the EGI service portfolio with complete integration with the rest of the EGI services: it uses Check-in for authentication, it is monitored by ARGO and it's documented in the EGI Documentation repository. It is constantly updated and maintained as part of the regular operation of the service. A screenshot of the new EGI Infrastructure Manager is shown in Figure 4.

SCIENCE CLOUD		About EOSC Browse Marketplace Providers Hub N	Vonitoring	Status (Contact us
¢	Go to Search				
		EGI Infrastructure Manager			HORIZONTAL SERVICE
	C K	EGLIM Cloud orchestrator Organisation: EGI Foundation			Access the service
×,00	.)0	Provided by: Institute of Instrumentation for Molecular Imaging - Grid and High Pr Computing - Universitat Politècnica de València ☆☆☆☆☆ (0.0 /5) 0 reviews 🗌 Add to comparison 🗌 Add to fa	erformance favourites		OPEN ACCESS
y O		→ Webpage → Helpdesk e-mail → Manual → Training information	ation		Ask a question about this service?

Infrastructure Manager (IM) is an open-source service that deploys complex and customized virtual infrastructures on multiple back-ends. The IM automates the, deployment, configuration, software installation, monitoring and update of virtual infrastructures. It supports a wide variety of public and on-premises Cloud back-ends, thus making user applications Cloud agnostic. In addition, it features DevOps capabilities, based on Ansible to enable the installation and configuration of all the user required applications providing the user with a fully functional infrastructure.

REVIEWS (0)

Features:

ABOUT

DETAILS

.....

- 1. Multi-Backend: Deploy on on-premises, public and scientific Clouds, and container orchestration platforms.
- Extensible plugins: Plugins available for OpenNebula, Amazon EC2, Google Cloud Platform, Microsoft Azure, Linode, Docker, Kubernetes, FogBow, T-Systems OTC, Orange, OpenStack, CloudStack and EGI Cloud Compute.
- 3. Hybrid Infrastructures: Deploy virtual infrastructures that span across multiple providers.
- 4. Embrace DevOps: Powered by Ansible, the IM provides recipes for common deployments (Hadoop clusters, etc.).
- 5. Interfaces: Featuring a CLI, a web GUI, an XML-RPC service API and a REST API.

GUIDELINES

SCIENTIFIC CATEGORISATION





CATEGORISATION



Figure 4. EGI Infrastructure Manager

2.2 DynDNS

	This activity will provide a Dynamic DNS service that allows assigning names under preconfigured domains to VM instances running on the EGI Cloud providers. The service shall provide:
Description	• a HA-setup of DNS servers distributed across different NGIs of the EGI infrastructure.
	• a web based interface for managing DNS entries for fedcloud.eu and subdomains.
	• expiration of hosts if not updated after a configurable period of time.
Task	3.1
URL	https://nsupdate.fedcloud.eu/
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Main service is located at IISAS (Slovakia), backup servers at EGI or other partner for High availability
Duration	M1-M30
Modality of access	Registration of hostnames via GUI portal, DNS update via REST API
Support offered	Detailed documentation about service and API, use guide, tutorial, presentations/training during events or on requests
Operational since	01.01.2021

All types of users: individual users, small and big user communities
- Individual users: register hostnames in generic domains/subdomains, assign hostnames to VMs
- Small communities: separate subdomains in generic domain fedcloud.eu (e.g. wenmr.fedcloud.eu) for the communities
- Big communities: integrate DNS service with domain owned by the communities (e.g. fedcloud.eosc-synergy.eu)

2.2.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of researchers	50	Internal logs	71	83	97	107	128	140
No of hostnames registered	100	Internal logs	149	173	197	243	307	381

2.2.2 Assessment

The Dynamic DNS installation provides self-managed registration of hostnames for VMs running on EGI's infrastructure. The service can be used by any registered Check-in user and can also support specific communities with the need of registering domain names under new domains. During the project period the service supported the registration of 381 host names (3.8 times increase over baseline) by 140 users (1.8 times increase over baseline period before the project).

The service is available via the EOSC marketplace and has been integrated with EGI Check-in and ARGO Monitoring during the initial months of the project. Documentation is available under the common EGI Documentation web and a webinar for its promotion in June 2021⁵.

⁵ <u>https://indico.egi.eu/event/5559/</u>

2.3 AppDB

	The EGI Applications Database (AppDB) is service that stores and provides to the public, information about:
	 software solutions in the form of native software products and virtual appliances,
	• the programmers and the scientists who are involved, and
Description	publications derived from the registered solutions
	Reusing software products registered in the AppDB means that scientists and developers may find a solution that can be directly utilized on the European Grid & Cloud Infrastructures without reinventing the wheel. This way, scientists can spend less or even no time developing, porting or even using a software solution to the Distributed Computing Infrastructures (DCIs). AppDB, thus, aims to avoid duplication of effort across the DCI communities, and to inspire scientists less familiar with DCI programming and usage. Moreover, AppDB provides added value through sub-services, such as enabling users to deploy and manage Virtual Machines on the EGI Cloud infrastructure from its VMOps dashboard
Task	3.1
URL	https://appdb.egi.eu/
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	IASA (Greece)
Duration	M1-M30
Modality of access	All the services are free at the point of use. The catalogs do not require any registration. Other services may require authentication and in some cases registration, using EGI Check-In
Support offered	Technical support is provided via the helpdesk central support team, and by the individual service providers. EGI Outreach activities also include webinars, training, and hands-on sessions during conferences and events.

Operational since	2008
User definition	Three types of users have been identified:
	(a) researchers (account owners),
	(b) typical visitors (anyone with or without account),
	(c) Cloud Resource Providers

2.3.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of researchers	1111	Internal logs	1196	1217	1237	1,259	1,277	1,294
No of cloud providers	34	Internal logs	28	28	28	29	29	32
No of visits	93694	Internal logs	48542	60218	68,704	77,895	80,682	59,330
No of items added/updated	14	Internal logs	24	18	11	16	10	16
No of items released/submitt ed	65	Internal logs	34	21	16	28	19	22
No of countries reach	104	Check-in	24	19	22	21	21	21
Names of countries reach		Check-in	Spain, Greece, Italy, Slovakia, Netherlands, Germany,	China, Croatia, Czechia, Finland, France,	China, Croatia, Czechia, Finland, France, Germany, Greece, Hungary, Indonesia, Italy,	Austria, Belgium, Canada, Czechia, Finland, France, Germany, Greece, Hungary, Italy, Japan,	China, Czechia, Finland, France, Georgia, Germany, Greece, Hungary, Indonesia, Ireland,	Austria, Belgium, China, Czechia, France, Germany, Greece, Hungary, Indonesia, Ireland,

	France,	Germany,	Japan,	Netherlands, Portugal,	Italy, Malta,	Italy, Netherlands,
	Poland,	Greece,	Netherlands,	Romania, Slovakia,	Netherlands,	Portugal, Romania,
	Czechia,	Indonesia,	Portugal, Romania,	Spain, Sweden,	Portugal, Slovakia,	Slovakia, Spain,
	Turkey,	Ireland,	Slovakia, South	Turkey, Ukraine,	Slovenia, Spain,	Sweden, Switzerland,
	Romania,	Italy,	Africa, Spain,	United Kingdom,	Sweden,	Taiwan, United
	Japan,	Netherland	Sweden,	United States	Switzerland, United	Kingdom, United
	Austria,	s,	Switzerland,		Kingdom, United	States
	Sweden,	Romania,	Thailand, Turkey,		States	
	Indonesia,	Slovakia,	United Kingdom			
	Hungary,	South				
	Denmark,	Africa,				
	Canada,	Spain,				
	Switzerland,	Switzerlan				
	Portugal, Iran,	d, Turkey,				
	Finland,	United				
	United States,	Kingdom,				
	United	United				
	Kingdom	States				

2.3.2 Assessment

AppDB is an installation that supports the EGI Cloud Compute service. It facilitates the reuse of software in the infrastructure by providing a software catalogue that is automatically distributed to providers in the form of Virtual Machine images. AppDB at M30 supported 1294 users adding/updating a total of 95 software entries and 140 were released as completely new entries.

AppDB released support for containers during June 2023, so its usage is not reflected in the VA metrics. This new feature should expand the number of items registered in AppDB as containers have become a major technology for sharing software. Alongside with the support for containers, AppDB also included FAIR improvements for FAIR software: improved metadata, assignment of PIDs to all the registered software and releases, support for RO-Crate and a FAIRness score for every software entry in AppDB.

A total of 32 cloud providers are fully integrated with AppDB to synchronise software and to deliver information about their capacity and capabilities to the AppDB Information System. As an integral part of the EGI Cloud Compute Service, AppDB does not have an individual entry in the EOSC marketplace yet. It's fully integrated with the EGI ecosystem since the start of the project.

2.4 MetaCentrumCloud - CPU

Description	CESNET is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. CESNET is a certified resource center of EGI, fully integrated with the federation.
Task	3.2
URL	https://cloud.metacentrum.cz/
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Czech Republic
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, trainings, webinars and hands-on sessions during conferences and events.
Operational since	01/07/2019
User definition	

2.4.1 Metrics

Metric name	Baseline	Define how measurem ent is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
	550	Internal service		10	64	4.00	70	<u></u>
NO OF USERS	550	ualabase	1	40	04	102	/0	01
CPU/hours	10,909,709	Accounting	35,712	818,874	715,995	2,682,431	5,777,539	4,750,464
No of countries								
reach	14	Check-in	13	12	16	17	20	14
	Canada							
	China							
	Croatia		Croatia					
	Czech Republic		Czechia					
			France					
	France		Germanv					
	Greece		Greece					
	Ireland							
	Italy		Indonesia				Belgium Czechia	
	Netherlands		Italy		Czechia, Denmark,	Austria, Czechia	Denmark, Egypt,	
	Russian		Netherlands	Czechia, France,	Finland, France,	Finland, France	Finland, France,	
	Federation		Singapore	Germany, Indonesia Italy	Germany, Greece,	Germany, Greece	Germany, Greece, Hungary Indonesia	Austria, Czechia, France Hungary
	Slovakia		Slovakia	Netherlands,	Netherlands,	Netherlands, Norway	Italy, Luxembourg,	Indonesia, Ireland,
				Portugal,	Norway, Poland,	Poland, Réunion	Netherlands, Norway,	Italy, Netherlands,
	Spain		Spain	Romania, Slovakia Spain	Slovakia, Spain, Switzerland, United	Slovakia, Spain	Réunion, Slovakia,	Norway, Slovakia, Spain Switzerland
Names of	Switzerland		Switzerland	Switzerland,	Kingdom, United	Kingdom, United	Kingdom, United	Taiwan, United
countries reach	United States	Check-in	United Kingdom	United Kingdom	States	States	States	Kingdom

2.4.2 Assessment

MetaCentrum - CPU is one of the installations of CESNET supporting the EGI Cloud Compute service in the EOSC Marketplace. This installation has delivered 14,781,015, surpassing the initially planned 8,760,000 CPU hours during the complete project (100% of the available VA capacity for the installation was consumed). The following VOs were supported over the period: biomed, enmr.eu, fusion, icecube, training.egi.eu, vo.emphasisproject.eu, vo.environmental.egi.eu, vo.max-centre.eu, vo.neanias.eu, vo.pangeo.eu, peachnote.com, vo.envrihub.eu and vo.thepund.it with a total of 61 users from 14 countries directly interacting with the installation.

Description	CESNET is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. CESNET is a certified resource center of EGI, fully integrated with the federation.
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Czech Republic
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.

2.5 MetaCentrumCloud - GPU

Operational since	01/09/2019
User definition	

2.5.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	550	Internal service database	0	1	1	10	11	11
GPU node/hours	31,104	Accounting	0	11,016	9,432	42,865	90,006	89,719
No of countries reach	14	Check-in	0	1	1	17	20	14
Names of	Canada China Croatia Czech Republic France Greece Ireland Italy Netherland s Russian Federation	Check in		United		Austria, Czechia, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Réunion, Slovakia, Spain, Switzerland, United Kingdom, United	Belgium, Czechia, Denmark, Egypt, Finland, France, Germany, Greece, Hungary, Indonesia, Italy, Luxembourg, Netherlands, Norway, Réunion, Slovakia, Spain, Sweden, United Kingdom, United	Austria, Czechia, France, Hungary, Indonesia, Ireland, Italy, Netherlands, Norway, Slovakia, Spain, Switzerland, Taiwan, United
countries reach	Slovakia	Check-in	-	Kingdom	United Kingdom	States	States	Kingdom

Switzerland Image: Switzerland United Image: Switzerland	Spain				
United	Switzerland				
	United				
States	States				

2.5.2 Assessment

MetaCentrum - GPU supports the usage of GPU resources on the CESNET provider as part of the EGI Cloud Compute service. This installation has delivered 243,038, surpassing the initially planned 204,400 GPU node hours during the complete project (100% of the available VA capacity for the installation was consumed).

2.6 MetaCentrumCloud - Storage

Description	CESNET is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. CESNET is a certified resource center of EGI, fully integrated with the federation.
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage
Location	Czech Republic
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation

Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	01/07/2019
User definition	

2.6.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	550	Internal service database	1	46	64	37	76	61
	375,587,79							
TB/month	6	Accounting	1.2	10.24	14	1,919	1,316	1,234
No of countries								
reach	14	Check-in	1	12	16	20	20	14
			Croatia	Czechia,				
	Canada		Czechia	France, Germany				
	China		France	Indonesia				
	Croatia		Germany	, Italy, Netherlan		Belgium, Czechia, Denmark Egypt	Belgium, Czechia, Denmark Egypt	
	Czech		Greece	ds,	Czechia, Denmark,	Finland, France,	Finland, France,	
	Republic		010000	Portugal,	Finland, France,	Germany, Greece,	Germany, Greece,	Austria, Czechia,
	France		Indonesia	Romania,	Germany, Greece,	Hungary, Indonesia,	Hungary, Indonesia,	France, Hungary,
			Italv	Slovakia,	Indonesia, Italy,	Italy, Luxembourg,	Italy, Luxembourg,	Indonesia, Ireland,
	Greece			Spain,	Netherlands, Norway,	Netherlands, Norway,	Netherlands, Norway,	Italy, Netherlands,
	Ireland		Netherlands	Switzerla	Poland, Slovakia,	Réunion, Slovakia,	Réunion, Slovakia,	Norway, Slovakia,
			Singapore	nd,	Spain, Switzerland,	Spain, Sweden, United	Spain, Sweden, United	Spain, Switzerland,
Names of	Italy			United	United Kingdom,	Kingdom, United	Kingdom, United	Taiwan, United
countries reach	Netherland	Check-in	Slovakia	Kingdom	United States	States	States	Kingdom

S	Spain			
Russian	Switzerland			
Federation	United			
Slovakia	Kingdom			
Spain				
Switzerlan				
d				
United				
States				

2.6.2 Assessment

MetaCentrum - Storage supports the associated storage resources to the cloud resources on CESNET as part of the EGI Online Storage service. This installation has delivered 7,829, surpassing the initially planned 6500 TB month during the complete project (100% of the available VA capacity for the installation was consumed). The installation is used in conjunction with the MetaCentrum - CPU so VOs and users are common: biomed, enmr.eu, fusion, icecube, training.egi.eu, vo.emphasisproject.eu, vo.environmental.egi.eu, vo.max-centre.eu, vo.neanias.eu, vo.pangeo.eu, icecube, peachnote.com, vo.envrihub.eu and vo.thepund.it VOs were supported with a total of 64 users from 16 countries directly interacting with the installation.

2.7 SCAI FedCloud v2

Description	The Installation is an OpenStack Cloud Cluster for Infrastructure-as-a-Service Cloud services connected to the EGI Federated Cloud Compute Service. While SCAI is a certified resource center of EGI, fully integrated with the federation, this VA is about providing access to a new installation that is until now only provided for biomedical research (Neuroscience).
Task	3.2
URL	

Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Germany
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	While SCAI has been an early FedCloud Site since 2016, this VA is from the end of 2018 / beginning of 2019, not yet connected to FedCloud.
User definition	Not reserved, but currently serving small communities with this installation.

2.7.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	20-30	Internal service database	0	0	0	19	17	13
CPU/hours	4,919,616	Accounting	0	0	0	76,270	267,960	411,361
No of countries reach	5	Check-in	0	0	0	6	7	6
Names of	Germany, France, Italy,	Check-in	0	0	0	Austria, France, Germany, Italy,	China, France, Germany, Greece,	China,France,German

countries reach	Spain, UK			Netherlands, Spain	Italy, Netherlands,	y,Hungray,Italy,Spain
					Spain	

2.7.2 Assessment

SCAI is one of the providers of the EGI Cloud Compute service. This provider had during 2021 a long downtime due to the upgrade of the cluster supporting the infrastructure that was largely delayed due to COVID restrictions that complicated the setup of the new hardware. For that reason the consumption of VA started late in the project (after M15). In early 2022 the provider managed to restore their system and the following VOs were allocated to the installation: vo.access.egi.eu, vo.sphinxsys.org, vo.fuvex.es and vo.ebrainhealth.eu. In 2023, the provider had a long downtime of 3 months caused by problems in their hardware, preventing the consumption of more capacity. At M30, SCAI delivered a total of 755,591 (38% over the 2,000,000 CPU hours available for VA).

2.8 EGI - GSIOS

Description	GSI will become a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. GSI will undergo all necessary certification steps before becoming operational.
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Germany
Duration	M1-M30

Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	
User definition	Single researchers, small and big communities

2.8.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	0	Internal service database	8	114	15	19	17	13
CPU/hours	0	Accounting	183	20,193	54679	73,767	179,416	759,300
No of countries reach	0	Check-in	N/A	4	6	6	7	6
Names of countries reach	0	Check-in	N/A	Germany, Italy, Spain, UK	Germany, Indonesia, Italy, Netherlands, Spain, UK	Austria, France, Germany, Italy, Netherlands, Spain	China, France, Germany, Greece, Italy, Netherlands, Spain	China,France,German y,Hungray,Italy,Spain

2.8.2 Assessment

EGI-GSIOS became a provider of the EGI Cloud Compute service at the end of the first VA reporting period (M5), since then it has started supporting the vo.access.egi.eu, vo.inteligg.com, vo.envrihub.eu, vo.bikesquare.eu, vo.usegalaxy.eu VOs consuming a total of

1,087,538 CPU hours (100% of the available VA capacity for the installation was consumed). The original capacity of this provider was reduced to 1,000,000 CPU hours as the use cases were not consuming all the allocated resources.

2.9 IN2P3-IRES-CPU

Description	IN2P3-IRES is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. IN2P3-IRES is a certified resource center of EGI, fully integrated with the federation.
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	France
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	Dec 2014
User definition	Single researchers, small and big communities

2.9.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	120	Internal service database	17	24	28	35	32	39
CPU/hours	3,095,735	Accounting	187252	262420	287,828	1,103,077	5,393,220	1,837,063
No of countries reach	5	Check-in	6	9	11	9	11	14
Names of countries reach	CH, FR, IT, NL, SE	Check-in	DE,ES,FR,HU ,IT,NL	DE,ES,F RHU,IT,N L,RO,UK	BR,DE,ES,FR,GR,I D,IT,NL,MK,PT,SE	BR,ES,FR,GB,GR,HU, IT,NL,SE	BR,CH,CZ,ES,FR,GB, GR,IT,NL,RO,SE	Brazil, France, Germany, Greece, Hungary, Italy, Netherlands, Romania, Slovakia, Spain, Sweden, Switerland, United Kingdom, United States

2.9.2 Assessment

IN2P3-IRES-CPU is one of the installations of IN2P3-IRES supporting the EGI Cloud Compute service in the EOSC Marketplace. It has delivered a total of 9,070,860 CPU hours surpassing the 6,132,000 available (100% of the available VA capacity for the installation was consumed). The installation supported: bioisi, biomed, fedcloud.egi.eu, saps-vo.i3m.upv.es, vo.access.egi.eu, vo.europlanet-vespa.eu, vo.emphasisproject.eu, lagoproject.net, vo.grand-est.vo and vo.operas-eu.org VOs with 39 users from 14 different countries.

2.10 IN2P3-IRES-Storage

Description IN2P3-IRES is a federated IaaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. IN2P3-IRES is a certified resource center of EGI, fully integrated with the federation.

Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage
Location	France
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	July 2018
User definition	Single researchers, small and big communities

2.10.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	25	Internal service database	8	24	28	35	32	39
TB/month	5.4	Accounting	7.754	8.648	8	407	1,821	926
--------------------------	------------------------	------------	-----------------------	-------------------------------------	--------------------------------------	--------------------------------	--------------------------------------	---
No of countries reach	5	Check-in	6	9	11	9	11	14
Names of countries reach	FR, IT, NL, ,SE, UK	Check-in	DE,ES,FR,HU ,IT,NL	DE,ES,F R,HU,IT, NL,RO,U K	BR,DE,ES,FR,GR,I D,IT,NL,MK,PT,SE	BR,ES,FR,GB,GR,HU, IT,NL,SE	BR,CH,CZ,ES,FR,GB, GR,IT,NL,RO,SE	Brazil, France, Germany, Greece, Hungary, Italy, Netherlands, Romania, Slovakia, Spain, Sweden, Switerland, United Kingdom, United States

2.10.2 Assessment

IN2P3-IRES-Storage supports the associated storage resources to the cloud resources on IN2P3 as part of the EGI Online Storage service. The uptake of the installation was very low at M15 (0.6%) and it was decided to reduce the number of available from 4,200 to 1,680 TB month. However, at the last months of the project, new use cases started using the installation and consumed a total of 3,179 TB month (100% of the available VA capacity for the installation was consumed). The installation is used in conjunction with the IN2P3-IRES-CPU, hence VOs and users are common: bioisi, biomed, fedcloud.egi.eu, saps-vo.i3m.upv.es, vo.access.egi.eu, vo.europlanet-vespa.eu, vo.emphasisproject.eu, lagoproject.net, vo.grand-est.vo and vo.operas-eu.org VOs with 39 users from 14 different countries.

2.11 TR-FC1-ULAKBIM - CPU

Description	TR-FC1-ULAKBIM is installed as an Federated Cloud Site and operated with its federated structure in order to provide computing infrastructure over cloud services.
Task	3.2
URL	
Service Category	Infrastructure service

Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Turkey
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	2014
User definition	Single researchers, small and big communities

2.11.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	27	Internal service database	14	27	29	9	11	9
CPU/hours	76.084	Accounting	2951	915750	1,345,404	1,244,252	1,115,620	1,044,590
No of countries reach	9	Check-in	1	7	8	5	6	7
Names of countries reach	GR, IT, ES, DE, HU,TR, HR, UK,SE	Check-in	Spain	France, Greece, Italy, Spain, Sweden,	France, Italy, Netherlands, North Macedonia, Spain, Sweden, Turkey, United Kingdom	France, Montenegro, Spain, Sweden, UK	China, France, Italy, Netherlands, Spain, United Kingdom	Austria, Hungary, Italy, Slovakia, Spain, Sweden, United Kingdom

		Turkey,		
		United		
		Kingdom		

2.11.2 Assessment

TR-FC1-ULAKBIM - CPU is the installation of TUBITAK supporting the EGI Cloud Compute service in the EOSC Marketplace. It has delivered a total of 5,668,567 CPU hours of the 6,132,000 available (92.44% of the available VA capacity for the installation was consumed). The installation supported: fusion, vo.access.egi.eu and vo.enes.org VOs, with a maximum of 29 different users from 8 countries (at M15).

2.12 TR-FC1-ULAKBIM - Storage

Description	TR-FC1-ULAKBIM is installed as an Federated Cloud Site and operated with its federated structure in order to provide computing infrastructure over cloud services.
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage
Location	Turkey
Duration	M1-M30

Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	2014
User definition	Single researchers, small and big communities

2.12.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	27	Internal service database	4	27	29	9	11	9
TB/month	3.8	Accounting	15.08	204.43	276.68	3,024	1,217	1,057
No of countries reach	9	Check-in	1	7	8	5	6	7
Names of countries reach	GR, IT, ES, DE, HU,TR, HR, UK,SE	Check-in	Spain	France, Greece, Italy, Spain, Sweden, Turkey, United Kingdom	France, Italy, Netherlands, North Macedonia, Spain, Sweden, Turkey, United Kingdom	France, Montenegro, Spain, Sweden, UK	China, France, Italy, Netherlands, Spain, United Kingdom	Austria, Hungary, Italy, Slovakia, Spain, Sweden, United Kingdom

2.12.2 Assessment

TR-FC1-ULAKBIM - Storage supports the associated storage resources to the cloud resources on TUBITAK as part of the EGI Online Storage service. This installation has delivered 6,612, going over the planned 4,200 TB month during the complete project (100% of the available VA capacity for the installation was consumed). The installation is used in conjunction with the TR-FC1-ULAKBIM - CPU so VOs and users are common: fusion, vo.access.egi.eu and vo.enes.org VOs, with 29 different users from 8 countries.

2.13 dCache

Description	dCache. This installation concerns an external, disk storage system, managed by the dCache front end solution, for high throughput cluster (HTC) computing.
Task	3.2
URL	https://surf.nl/
Service Category	Infrastructure service
Service Catalogue	
Location	Amsterdam (NL)
Duration	M1-M30
Modality of access	ssh keys, tokens and X.509
Support offered	Standard support in the form of operations, helpdesk and online documentation is provided.
Operational since	1-Sep-05

User definition	Collaborative research teams with a focus on HTC computing.

1.1.1 Metrics

Metric name	Bas elin e	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of registered users	0	Extracted from local accounting of the provider	6	7	7	3	25	27
TB*month	0	Extracted from local accounting of the provider	500	500	500	1,080	1,500	1,272
Degree of users satisfaction	0	Degree of users satisfaction	3	4	4	4	4	4

2.13.1 Assessment

dCache is a new installation from SURF that supports the EGI Online Storage service for those users running workloads on the High Throughput Computing cluster supported by the Data Processing Compute installation. As the consumption rate in M15 was high, the number of units available for this installation were increased from 2,520 to 5,078 in an amendment. Over the project duration the installation supported 27 users of the lofar and enmr.eu VO that have allocated a total of 6,852 TB month (100% of the available VA capacity for the installation was consumed).

2.14 Spider Storage

Description	Spider Storage. This installation concerns the shared, disk storage system, managed by Ceph/CephFS, for high throughput cluster (HTC) computing.
Task	3.2

URL	https://surf.nl/
Service Category	Infrastructure service
Service Catalogue	
Location	Amsterdam (NL)
Duration	M1-M30
Modality of access	ssh keys
Support offered	Standard support in the form of operations, helpdesk and online documentation is provided.
Operational since	15-Mar-20
User definition	Collaborative research teams with a focus on HTC computing.

2.14.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of registered users	0	Extracted from local accounting of the provider	6	9	9	6	33	33
TB*month	0	Extracted from local accounting of the provider	250	250	250	1,482	1,560	1,404

Degree of users								
satisfaction	0	Degree of users satisfaction	4	3	3	3	3	3

2.14.2 Assessment

Spider Storage is the second storage installation from SURF supporting users running workloads on the High Throughput Computing cluster supported by the Data Processing Compute installation. As the consumption rate in M15 was high, the number of units available for this installation were increased from 3,480 to 5,547 in an amendment. During the project the project the installation supported 33 new users of the lofar and enmr.eu VO that have allocated 6,756 TB month out of the 5,547 available (100% of the available VA capacity for the installation was consumed).

2.15 Data Processing Compute

Description	Data Processing. This installation concerns customizable platform as a service (PaaS) solutions for high throughput cluster (HTC) computing.
Task	3.2
URL	https://surf.nl/
Service Category	Infrastructure service
Service Catalogue	
Location	Amsterdam (NL)
Duration	M1-M30

Modality of access	ssh keys
Support offered	Standard support in the form of operations, helpdesk and online documentation is provided.
Operational since	15-Mar-20
User definition	Collaborative research teams with a focus on HTC computing.

2.15.1 Metrics

Metric name	Bas elin e	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of registered users	0	Extracted from local accounting of the provider	6	9	9	6	34	34
CPU*hours	0	Extracted from local accounting of the provider	3373	7291	11841	315,897	802,229	1,556,457
Degree of users satisfaction	0	Satisfaction survey sent to users	5	4	4	4	4	4

2.15.2 Assessment

Data Processing is a new flavor for the EGI High Throughput Computing service delivered by SURF. This installation brings a customisable computing facility for supporting users in Platform as a Service (PaaS) that runs on top of an internal elastic cloud. It is a feature-rich platform that provides users with a batch processing cluster (based on Slurm) for generic data processing applications, high performance data access, fast network connectivity to internal and external data centers, support for containers, Jupyter notebooks and many other user-centric features. In EGI-ACE the installation has supported 34 different users from the lofar and enmr.eu VOs. In M15, the uptake of the service from the lofar community was lower than expected due to delays in the developments from the community,

hence additional workloads related to lofar were started and capacity was allocated to the WeNMR community to increase the consumption of resources. Even with these new workloads the consumption rate did not increase as expected so, the available capacity was reduced from 5,500,000 to 3,025,000 CPU hours. At M30, the installation delivered 2,697,088 CPU hours (89.16% of the available VA capacity for the installation was consumed).

2.16 INFN-BARI-CPU

Description	200 CPU cores
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	INFN-Bari (Bari)
Duration	M1-M30
Modality of access	authentication and authentication required, possible configuration to be defined
Support offered	Yes
Operational since	
User definition	

2.16.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users communities	0	Internal service configuration	2	7	9	9	9	9
CPU/hours	0	Accounting	879,461	432,854	2,103,563	3,167,709	2,707,848	3,970,654
No of countries reach	0	Check-in	4	4	8	8	8	8
Names of countries reach	0	Check-in	Italy, Spain, Germany, Netherland	Italy, Spain, Germany, Netherland	Finland, Germany, Indonesia, Italy, Netherlands, Portugal, Spain, Sweden	Finland, Germany, Indonesia, Italy, Netherlands, Portugal, Spain, Sweden	Finland, Germany, Indonesia, Italy, Netherlands, Portugal, Spain, Sweden	Finland, Germany, Indonesia, Italy, Netherlands, Portugal, Spain, Sweden

2.16.2 Assessment

INFN-BARI-CPU delivers CPU resources as part of the EGI Cloud Compute service in the EOSC Marketplace from INFN-BARI. In M15, the installation had already consumed 78% of the available capacity so the number of units was increased from 4,380,000 to 7,498,695 CPU hours. At the end of the project, the installation supported 9 different user communities from the following VOs: ehoney.infn.it, fedcloud.egi.eu, fermi-lat.infn.it, geohazards.terradue.com, vo.access.egi.eu, vo.binare-oy.eu, vo.emso-eric.eu, vo.emsodev.eu, and vo.seadatanet.org reaching 8 different countries. It has delivered a total of 13,262,091CPU hours surpassing the 7,498,695 available (100% of the available VA capacity for the installation was consumed).

2.17 INFN-BARI-Storage

Description 55 TB net disk space (69 raw)

Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	INFN-Bari (Bari)
Duration	M1-M30
Modality of access	authentication and authentication required, possible configuration to be defined
Support offered	Yes
Operational since	
User definition	

2.17.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users communities	0	Internal service configuration	2	7	9	9	9	9
TB/month	0	Accounting	104	115	397	549.43	583.93	798.11

No of countries reach	0	Check-in	4	4	8	8	8	8
				Italy,	Finland, Germany,	Finland, Germany,	Finland, Germany,	Finland, Germany,
			Italy, Spain,	Spain,	Indonesia, Italy,	Greece, Italy,	Greece, Italy,	Greece, Italy,
			Germany,	Germany,	Netherlands,	Netherlands, Spain,	Netherlands, Spain,	Netherlands, Spain,
Names of			Netherland	Netherlan	Portugal, Spain,	Sweden, United	Sweden, United	Sweden, United
countries reach	0	Check-in		d	Sweden	Kingdom	Kingdom	Kingdom

2.17.2 Assessment

INFN-BARI-Storage supports the associated storage resources to the cloud resources on INFN-BARI as part of the EGI Online Storage service. The usage if this installation was slow in the first period of the project and its capacity was adjusted by reducing from

1,650 to 335 TB month. During the second half of the project the consumption rate increased significantly and the installation delivered 2,548 of the available 335TB month during the complete project (100% of the available VA capacity for the installation was consumed). The installation is used in conjunction with the INFN-BARI-CPU so VOs and users are common: ehoney.infn.it, fedcloud.egi.eu, fermilat.infn.it, geohazards.terradue.com, vo.access.egi.eu, vo.binare-oy.eu, vo.emso-eric.eu, vo.emsodev.eu, and vo.seadatanet.org reaching 8 different countries.

2.18 INFN-CNAF-CPU

Description	200 CPU cores
Task	3.2
URL	
Service Category	Infrastructure service

Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	INFN-CNAF (Bologna)
Duration	M1-M30
Modality of access	authentication and authentication required, possible configuration to be defined
Support offered	Yes
Operational since	
User definition	

2.18.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users								
communities	0	Internal service configuration	0	2	4	8	8	9
CPU/hours	0	Accounting	0	148,379	372,047	1,213,001	1,507,679	1,427,948
No of countries reach	0	Check-in	0	1	4	11	11	12
						Albania, France,	Albania, France,	Albania, France,
						Germany, Greece,	Germany, Greece,	Germany, Greece,
Names of					Italy India Spain	Italy, Kosovo,	Italy, Kosovo,	Italy, Kosovo,
countries reach	0	Check-in	-	Italy	Norway	Netherlands,	Netherlands, Serbia,	Netherlands, Serbia,
	0			nary	Norway	Serbia, Slovenia,	Slovenia, Spain,	Slovenia, Spain,

			Spain,	Switzerland, Ukraine	Switzerland, Ukraine
			Switzerland		

2.18.2 Assessment

INFN-CNAF is a new provider of the EGI Cloud Compute service that finalised its integration at the end of the second VA reporting period (M10) and started delivering capacity once the integration was completed. Since then, it provided 4,669,054 CPU hours out surpassing the 4,380,000 available (100% of the available VA capacity for the installation was consumed). INAF-CNAF was engaged with nine user communities: digifarm.io and vo.thepund.it from the EOSC-DIH; vo.inactive-sarscov2.eu, vo.i-energy.eu, fermi-lat.infn.it, virgo and crystal_channelling_simulation.vo.egi.eu from the project's Open Calls; and vo.projectescape.eu from EOSC-Future. These bring four users from four different countries

2.19 INFN-CNAF-GPU

Description	2 GPUs per server
Task	
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	INFN-CNAF (Bologna)
Duration	M1-M30
Modality of access	authentication and authentication required, possible configuration to be defined

Support offered	Yes
Operational since	
User definition	

2.19.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users communities	0	Internal service configuration	0	0	1	3	3	4
GPU node/hours	0	Accounting	0	0	8,765	17,996	21,168	18,672
No of countries reach	0	Check-in	0	0	1	11	12	12
Names of countries reach	0	Check-in	-	-	Norway	Albania, France, Germany, Greece, Italy, Kosovo, Netherlands, Serbia, Slovenia, Spain, Switzerland	Albania, France, Germany, Greece, Italy, Kosovo, Netherlands, Serbia, Slovenia, Spain, Switzerland, Ukraine	Albania, France, Germany, Greece, Italy, Kosovo, Netherlands, Serbia, Slovenia, Spain, Switzerland, Ukraine

2.19.2 Assessment

INFN-CNAF-GPU supports the GPU resources in the INFN-CNAF providers that are used in conjunction with the INFN-CNAF-CPU and INFN-CNAF-Storage. This usage of GPUs increased during the second half of the project and the amendment increased the number of

units from 43,800 to 55,173 GPU node hours. At M30, installation delivered 66,601 GPU node hours (100% of the available VA capacity for the installation was consumed).

2.20 INFN-CNAF-Storage

Description	55 TB of net storage space (69 raw)
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	INFN-CNAF (Bologna)
Duration	M1-M30
Modality of access	authentication and authentication required, possible configuration to be defined
Support offered	Yes
Operational since	
User definition	

2.20.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users								
communities	0	Internal service configuration	0	2	4	8	8	9
TB/month	0	Accounting	0	85.76	132	500	615	603
No of countries								
reach	0	Check-in	0	1	4	11	11	12
						Albania, France,		
						Germany, Greece,	Albania, France,	Albania, France,
						Italy, Kosovo,	Germany, Greece,	Germany, Greece,
						Netherlands,	Italy, Kosovo,	Italy, Kosovo,
						Serbia, Slovenia,	Netherlands, Serbia,	Netherlands, Serbia,
Names of					Italy, India, Spain,	Spain,	Slovenia, Spain,	Slovenia, Spain,
countries reach	0	Check-in	-	Italy	Norway	Switzerland	Switzerland, Ukraine	Switzerland, Ukraine

2.20.2 Assessment

INFN-CNAF-Storage supports the associated storage resources to the cloud resources on INFN-CNAF as part of the EGI Online Storage service. As uptake of the storage was low (13% at M15), and amendment reduced the available capacity from 4950 to 1,776 TB month. At M30, this installation delivered 1,936 TB month (100% of the available VA capacity for the installation was consumed). The installation is used in conjunction with the INFN-CNAF-CPU so VOs and users are common.

2.21 INCD-Lisbon (NCG)-CPU

Description	Portuguese National Distributed Computing Infrastructure Openstack IaaS cloud computing service (virtual machines)
Task	3.2

URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Portugal
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	2014
User definition	Single researchers, small and big communities

2.21.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	50	Internal service database	14	10	26	31	26	26
CPU/hours	4,751,023	Accounting	486,912	738,166	663,408	2,570,812	353,568	1,103,280
No of countries	1	Check-in	6	5	8	9	12	12

reach										
			Germany,	Brasil,			Germany, G	reece,	Germany,	Greece,
			Indonesia,	Portugal,			Indonesia,	Italy,	Indonesia,	Italy,
			Netherlands,	Indonesia	Germany, Indonesia,	Germany, Greece,	Netherlands, Po	rtugal,	Netherlands,	Portugal,
			Portugal,	,	Netherlands, Portugal,	Indonesia, Italy,	Slovakia, South	Africa,	Slovakia, Sou	uth Africa,
Names of			Slovakia,	Germany,	Slovakia, Spain, UK,	Netherlands, Portugal,	Spain, UK, Cz	echia,	Spain, UK,	Czechia,
countries reach	Portugal	Check-in	Spain	Chile	Italy	Slovakia, Spain, UK,	Denmark		Denmark	

2.21.2 Assessment

INCD-Lisbon (NCG)-CPU delivers CPU resources for the EGI Cloud Compute service. The installation supports mainly two of the WP5 Data Spaces VOs: opencoast.eosc-hub.eu and vo.lifewatch.eu. Together they support 26 users from 12 different countries. As in M15, the supported communities were expected to keep their usage until the end of the project, the capacity was increased from 3,066,000 to 5,268,173 CPU hours. INCD-Lisbon (NCG)-CPU has provided 5,916,146 CPU hours, surpassing the 5,268,173CPU hours available (100% of the available VA capacity for the installation was consumed).

2.22 INCD-Lisbon (NCG)-Storage

Description	Portuguese National Distributed Computing Infrastructure Openstack IaaS cloud computing service (storage backend)
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	Portugal

Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	2014
User definition	Single researchers, small and big communities

2.22.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	50	Internal service database	14	10	26	31	26	26
TB/month	110	Accounting	26.5	86	87	184	134	148
No of countries reach	1	Check-in	6	5	8	9	12	12
			Germany, Indonesia, Netherlands,	Brasil, Portugal,	Germany, Indonesia, Netherlands,	Germany, Greece, Indonesia, Italy, Netherlands,	Germany, Greece, Indonesia, Italy, Netherlands, Portugal, Slovakia, South Africa,	Germany, Greece, Indonesia, Italy, Netherlands, Portugal, Slovakia, South Africa,
reach	Portugal	Check-in	Slovakia, Spain	Germany, Chile	Spain, UK, Italy	Spain, UK,	Spain, UK, Czechia, Denmark	Spain, UK, Czechia, Denmark

2.22.2 Assessment

INCD-Lisbon (NCG)-Storage delivers storage resources associated with the INCD-Lisbon (NCG)-CPU installation as part of the EGI Online Storage service. The installation supports the same communities and users as the CPU one. The consumption rate for storage in the installation was not as fast as the CPU, so the available capacity was reduced from 2,450 to 613 TB month. At M30, it provided 666 TB months (100% of the available VA capacity for the installation was consumed).

2.23 EGI-IISAS-CPU

Description	IISAS is a federated IaaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on -demand controlled via APIs. IISAS is a certified resource center of EGI, fully integrated with the federation.
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Bratislava, Slovakia
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service requires registration as an EGI user on Check-in and enrollment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, trainings, webinars and hands-on sessions during conferences and events.
Operational since	2012

User definition			

2.23.1 Metrics

Ba Metric name eli e	as lin e	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	74	Internal service database	4	13	16	35	40	41
CPU/hours 658	68,0 00	Accounting	216,676	220,692	506,049	624,115	694,521	925,471
No of countries reach	13	Check-in	4	7	13	15	12	13
UK, UA, SE, SK, NL, IT, HU, GR FR, ES, Names of DE, countries reach CZ	<, , , , , , , , , , , , , , , , , , ,	Check-in	Italy,Slovakia, Spain,Indone sia	Czechia,F rance,Ger many,Ind onesia,Ita Iy,Slovaki a.Spain	Albania,France,Germa ny,Greece,Indonesia,It aly,Kosovo,Netherland s,Serbia,Slovakia,Slov enia,Spain,United Kindom	Albania, Czechia, Estonia, France, Germany, Greece, Italy, Malta, Netherlands, Serbia, Slovakia, Slovenia, ‱Spain, United Kingdom, Vietnam	Albania, Czechia, Germany, Greece, Italy, Kosovo, Netherlands, Poland, Serbia, Slovakia, Slovenia, Spain	Albania,Belgium,Franc e,Germany,Greece,Ita ly,Malta,Netherlands,P ortugal,Serbia,Slovaki a,Slovenia,Spain

2.23.2 Assessment

EGI-IISAS-CPU is an installation supporting the Slovakian IISAS provider of the EGI Cloud Compute service in the EOSC Marketplace. The installation delivers CPU resources as Virtual Machines for 13 VOs: biomed, cryoem.instruct-eric.eu, fedcloud.egi.eu, icecube, training.egi.eu, vo.access.egi.eu, vo.beamide.com, vo.builtrix.tech, vo.e-rihs.eu, vo.latitudo40.com.eu, vo.matrycs.eu, vo.nextgeoss.eu and vo.oipub.com. 41 users from 13 different countries have accessed the installation in the reporting period. At M15, the consumption

of resources was still low (14.7% of the available VA capacity) and the project decided to reduce the number of units from 6, 132,000 to 3,066,000 CPU hours to create a GPU installation at IISAS that would better match the requests from Open Call use cases. The installation delivered a total of 3,187,524 CPU hours from the (100% of the available VA capacity for the installation was consumed).

2.24 EGI-IISAS-GPU

Description	IISAS is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on -demand controlled via APIs. IISAS is a certified resource center of EGI, fully integrated with the federation.
Task	3.2
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Bratislava, Slovakia
Duration	M26-M30
Modality of access	Services are free at the point of use. Access to the service requires registration as an EGI user on Check-in and enrollment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, trainings, webinars and hands-on sessions during conferences and events.
Operational since	2022
User definition	

2.24.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	0		0	0	0	0	0	12
GPU/hours	0		0	0	0	0	0	23,937
No of countries reach	0		0	0	0	0	0	13
Names of countries reach	-		-	-	-	-	-	Albania,Belgium,Franc e,Germany,Greece,Ita ly,Malta,Netherlands,P ortugal,Serbia,Slovaki a,Slovenia,Spain

2.24.2 Assessment

EGI-IISAS-GPU is an installation supporting the Slovakian IISAS provider of the EGI Cloud Compute service in the EOSC Marketplace created after an amendment to offer GPU resources to meet the demand from the use cases. It is used in conjunction with EGI-IISAS-CPU and supports the same VOs: biomed, cryoem.instruct-eric.eu, fedcloud.egi.eu, Icecube, training.egi.eu, vo.access.egi.eu, vo.beamide.com, vo.builtrix.tech, vo.e-rihs.eu, vo.latitudo40.com.eu, vo.matrycs.eu, vo.nextgeoss.eu and vo.oipub.com, with 12 users from 13 different countries. The installation was put in production in January 2023 (M25) and delivered 23,937 GPU hours out of the 25,920 available (92.35% of the available VA capacity for the installation was consumed).

2.25 DESY-FedCloud

Description	DESY is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. DESY is a certified resource center of EGI, fully integrated with the federation.
Task	3.2

URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Germany
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, trainings, webinars and hands-on sessions during conferences and events.
Operational since	Jan 2018
User definition	Single researchers, small and big communities

2.25.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
		Internal service						
No of users	40	database	0	25	53	27	18	10
CPU/hours	2,102,400	Accounting	0	6,573	14,497	195,023	716,433	788.875

No of countries reach	7	Check-in	0	5	8	7	7	4
Names of countries reach	Germany (XFEL, CFEL), France (ESRF, ILL) UK (STFC), Sweden (ESS), Czech Republic (ELI), Netherlands (EGI), Canada (UVIC)	Check-in	-	Germany, Italy, Netherlan ds, Switzerla nd, United Kingdom	Austria, Denmark, Germany, Hungary, Italy, Netherlands, Romania, Switzerland	France, Germany Greece, Hungary Italy, Netherlands Spain	Czechia, France, Germany, Italy, Netherlands, Spain, United Kingdom	Germany, Greece, Hungary, Italy

2.25.2 Assessment

DESY-Fedcloud supports the delivery of CPU resources from DESY within the EGI Cloud Compute service. The installation has engaged with three communities: vo.openrdm.eu, peachnote.com and vo.cite.gr supporting up to 53 different users from 8 countries. The consumption rate significantly increased from M16 onwards thanks to the allocation of use cases, at M30 the installation provided CPU 1,721,401 hours from the 2,000,000 available (86.07% of the available VA capacity for the installation was consumed).

2.26 CESGA-CPU

Description	CESGA is a federated laaS Clo-ud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. CESGA is a certified resource center of EGI, fully integrated with the federation.
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/

Location	Santiago, Spain
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	2015
User definition	Single researchers, small and big communities

2.26.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	46	Internal service database	18	21	18	16	11	5
CPU/hours	3,465,332	Accounting	426,181	327,860	565,740	2,686,233	763,033	1,621,180
No of countries reach	10	Check-in	8	8	8	8	8	5
Names of countries reach	Poland, Germany, Netherland s, Cyprus, China, USA, Greece, Italy, Spain, Portugal	Check-in	Germany, Greece, Indonesia, Italy, Netherlands, Slovakia, Spain, United Kingdom	France, Germany, Greece, Indonesia, Italy, Netherland s, Slovakia, Spain, United	Germany, Indonesia, Italy, Netherlands, Portugal, Slovakia, Spain, United Kingdom	Germany, Greece, Indonesia, Italy, Netherlands, Slovakia, Spain, United Kingdom	China, Czechia, Germany, Italy, Netherlands, Spain, United Kingdom, United States	China, Germany, Hungary, Italy, Spain

		Kingdom		
		Kinguom		
		-		

2.26.2 Assessment

CESGA-CPU is the installation of CESGA supporting the EGI Cloud Compute service in the EOSC Marketplace. As the consumption rate of this installation was good in the first half of the project, the capacity was adjusted from 4,500,000 to 4,770,000 CPU hours. At M30, this installation delivered 6,390,227 CPU hours (100% of the available VA capacity for the installation was consumed). 22 VOs were supported over the period with up to 21 users from 8 countries directly interacting with the installation.

2.27 CESGA-Storage

Description	CESGA is a federated IaaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. CESGA is a certified resource center of EGI, fully integrated with the federation.
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	Santiago, Spain
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation

Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	2015
User definition	Single researchers, small and big communities

2.27.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
		Internal service						
No of users	46	database	46	28	28	7	8	8
TB/month	89	Accounting	0	0	0	168	38	32
No of countries reach	10	Check-in	8	8	8	8	8	5
Names of countries reach	Poland, Germany, Netherlands, Cyprus, China, USA, Greece, Italy, Spain, Portugal	Check-in	Germany, Greece, Indonesia, Italy, Netherlands, Slovakia, Spain, United Kingdom	France, Germany, Greece, Indonesia, Italy, Netherlands, Slovakia, Spain, United Kingdom	Germany, Indonesia, Italy, Netherlands, Portugal, Slovakia, Spain, United Kingdom	Germany, Greece, Indonesia, Italy, Netherlands, Slovakia, Spain, United Kingdom	China, Czechia, Germany, Italy, Netherlands, Spain, United Kingdom, United States	China, Germany, Hungary, Italy, Spain

2.27.2 Assessment

CESGA-Storage is the installation associated to CESGA-CPU supporting the EGI Online Storage service. The number of units in the installation was decreased from 950 to 665 TB month to accommodate for larger number of CPU hours in CESGA-CPU. At M30, it

delivered 238 TB month of the 665 available during the whole project (35.39% of the available VA capacity for the installation was consumed).

2.28 IFCA-LCG2-CPU

Description	IFCA-LCG2 is a federated IaaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. IFCA-LCG2 is a certified resource center of EGI, fully integrated with the federation.
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Spain
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	06/2012
User definition	Single researchers, small and big communities

2.28.1 Metrics

Metric name Ba	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users >20	200	Internal service database	35	41	47	123	55	46
CPU/hours 4	4,000,000	Accounting	1,217,099	1,778,936	1,318,414	2,381,662	2,892,776	2,716,851
No of countries reach > 8	8	Check-in	9	10	12	17	18	19
ES, Names of FR, countries reach SK	5, PT, IT, R, GE, PL, K, NL	Check-in	Spain, Portugal, Gernamy, Hungary, Italy, Netherlands, Slovakia, Switzerland, UK	Spain, Portugal, Hungary, Germany, Italy, Switzerlan d, Netherland s, Nigeria, Slovakia	EEUU, France, Germany, Hungary, Italy, Netherlands, Nigeria, Portugal, Slovakia,Spain, Switzerland, UK	United States, Hungary, Italy, Portugal, Germany, Czech Replublic, Greece, Netherlands, Ukraine, Switzerland, Austria, Slovakia, United Kingdom, Bosnia and Herzegovina, Nigeria, France, Spain	EEUU, Spain, France, Portugal, UK, France, Belgium, The Netherlands, Italy, Switzerland, Germany, Austria, Czechia, Bosnia and Herzegobina, Creece, Hungary, Romania, Slovakia	Spain, Portugal, EEUU, Nigeria, France, Italy, UK, Switzerland, Germany, Belgium, Netherlands, Czechia, Austria, Slovakia, Hungary, Bosnia and Herzegovina, Greece, Romania, Ukraine

2.28.2 Assessment

IFCA-LCG2 - CPU supports CSIC participation in the EGI Cloud Compute service. The installation has been successfully engaging with eight VOs: openrisknet.eu, opencoast.eosc-hub.eu, vo.access.egi.eu, training.egi.eu, vo.lifewatch.eu, cos4cloud-eosc.eu, minka-sdg.org, and icecube. These brought up to 55 users from 19 different countries over the reporting period. The installation al ready exhausted its VA capacity by M15, so the capacity was increased from 2,500,000 to 3,369,149 CPU hours. At M30, a total of 12,305,738 CPU hours were delivered (100% of the available VA capacity for the installation).

2.29 IFCA-LCG2-Storage

Description	IFCA-LCG2 is a federated IaaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. IFCA-LCG2 is a certified resource center of EGI, fully integrated with the federation.
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	Spain
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	06/2012
User definition	Single researchers, small and big communities

2.29.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	>200	Internal service database	35	41	47	123	52	46
TB/month	500	Accounting	2	9	14	20	16	18
No of countries reach	> 8	Check-in	9	10	11	17	18	19
Names of countries reach	ES, PT, IT, FR, GE, PL, SK, NL	Check-in	Spain, Portugal, Gernamy, Hungary, Italy, Netherlands, Slovakia, Switzerland, UK	Spain, Portugal, Hungary, Germany, Italy, Switzerlan d, Netherland s, Nigeria, Slovakia	EEUU, Germany, Hungary, Italy, Netherlands, Nigeria, Portugal, Slovakia,Spain, Switzerland, UK	United States, Hungary, Italy, Portugal, Germany, Czech Replublic, Greece, Netherlands, Ukraine, Switzerland, Austria, Slovakia, United Kingdom, Bosnia and Herzegovina, Nigeria, France, Spain	EEUU, Spain, France, Portugal, UK, France, Belgium, The Netherlands, Italy, Switzerland, Germany, Austria, Czechia, Bosnia and Herzegobina, Creece, Hungary, Romania, Slovakia	Spain, Portugal, EEUU, Nigeria, France, Italy, UK, Switzerland, Germany, Belgium, Netherlands, Czechia, Austria, Slovakia, Hungary, Bosnia and Herzegovina, Greece, Romania, Ukraine

2.29.2 Assessment

IFCA-LCG2 - Storage is the associated installation to IFCA-LCG2 - CPU of the EGI Online Storage service. CSIC participation in the EGI Cloud Compute service and as such it's used by the same communities and users. The installation reduced its capacity from

1,800 TB month to 90 to accommodate for more CPU capacity at CSIC. At M30, it delivered 79TB months over the reporting period out of the total 90 available (88.23% of the available VA capacity for the installation was consumed).

2.30 INCD-LIP-CPU

Description	Portuguese National Distributed Computing Infrastructure Openstack IaaS cloud computing service (virtual machines)
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Portugal
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	2014
User definition	Single researchers, small and big communities

2.30.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	50	Internal service database	14	10	26	31	26	26
CPU/hours	4,751,023	Accounting	486,912	738,166	663,408	2,570,812	353,568	1,103,280
No of countries								
reach	1	Check-in	6	5	8	9	12	12
			Germany,	Brasil,			Germany, Greece,	Germany, Greece,
			Indonesia,	Portugal,			Indonesia, Italy,	Indonesia, Italy,
			Netherlands,	Indonesia	Germany, Indonesia,	Germany, Greece,	Netherlands, Portugal,	Netherlands, Portugal,
			Portugal,	,	Netherlands, Portugal,	Indonesia, Italy,	Slovakia, South Africa,	Slovakia, South Africa,
Names of			Slovakia,	Germany,	Slovakia, Spain, UK,	Netherlands, Portugal,	Spain, UK, Czechia,	Spain, UK, Czechia,
countries reach	Portugal	Check-in	Spain	Chile	Italy	Slovakia, Spain, UK,	Denmark	Denmark

2.30.2 Assessment

This service is the same as 2.21, assessment is provided in section 2.21.2.

2.31 INCD-LIP-Storage

Description	Portuguese National Distributed Computing Infrastructure Openstack IaaS cloud computing service (storage backend)				
Task	3.3				
URL					
Service Category	Infrastructure service				
Service Catalogue	https://www.egi.eu/services/online-storage/				
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Location	Portugal				
Duration	M1-M30				
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation				
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.				
Operational since	2014				
User definition	Single researchers, small and big communities				

2.31.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	50	Internal service database	14	10	26	31	26	26
TB/month	110	Accounting	26.5	86	87	184	134	148
No of countries reach	1	Check-in	6	5	8	9	12	12
Names of countries reach	Portugal	Check-in	Germany, Indonesia, Netherlands, Portugal, Slovakia,	Brasil, Portugal, Indonesia , Germany,	Germany, Indonesia, Netherlands, Portugal, Slovakia, Spain, UK, Italy	Germany, Greece, Indonesia, Italy, Netherlands, Portugal, Slovakia, Spain, UK,	Germany, Greece, Indonesia, Italy, Netherlands, Portugal, Slovakia, South Africa, Spain, UK, Czechia,	Germany, Greece, Indonesia, Italy, Netherlands, Portugal, Slovakia, South Africa, Spain, UK, Czechia,

	Spain	Chile		Denmark	Denmark

2.31.2 Assessment

This service is the same as 2.22, assessment is provided in section 2.22.2.

2.32 CYFRONET-CLOUD-CPU

Description	CYFRONET-CLOUD is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on demand controlled via APIs. CYFRONET-CLOUD is a certified resource center of EGI, fully integrated with the federation.
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Krakow, PL
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	08/2014

User definition	Single researchers, small and big communities
User deminition	Single researchers, small and big communities

2.32.1 Metrics

Metric name	Baseline	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	3	Internal service database	1	6	27	27	7	37
CPU/hours	253,294	Accounting	34,306	117,504	55,495	212,150	58,752	8,321,057
No of countries reach	3	Check-in	1	4	1	8	5	7
						Belgium, Greece, Indonesia, Italy,		Croatia, Hungary, Italy, Netherlands,
Names of countries reach	FR, IT,PL	Check-in	UK	IT, PL, ES, UK	ID	Poland, Spain, United Kingdom	Belgium, Greece, Italy, Poland, Spain	Poland, Spain, Ukraine

2.32.2 Assessment

CYFRONET-CLOUD-CPU is the installation of CYFRONET supporting the EGI Cloud Compute service in the EOSC Marketplace. This installation has delivered 8,799,264 CPU hours, surpassing the initially planned 8,500,000 during the complete project (100% of the available VA capacity for the installation was consumed). Two use cases from the Open Call helped to increase the consumption over the last period: Grapevine and Sciensano, both needing access to high performance resources that CYFRONET delivered. Besides these two use cases, the provider engaged with the vo.access.egi.eu VO that supports piloting activities.

2.33 CYFRONET-CLOUD-Storage

Description	CYFRONET-CLOUD is a federated laaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on -demand controlled via APIs. CYFRONET-CLOUD is a certified resource center of EGI, fully integrated with the federation.
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Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	Krakow, PL
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	08/2014
User definition	Single researchers, small and big communities

2.33.1 Metrics

Metric name	Bas elin e	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users communities supported from	3	Internal service database	1	1	1	1	1	1780

EGI VOs								
TB/month	120	Accounting	0.63	0.39	0.2	4	1.02	0
No of countries reach	3	Check-in	1	1	1	8	5	0
Names of countries reach	FR, IT,PL	Check-in	United Kingdom	United Kingdom	Indonesia	Belgium, Greece, Indonesia, Italy, Poland, Spain, United Kingdom	Belgium, Greece, Italy, Poland, Spain	-

2.33.2 Assessment

CYFRONET-CLOUD-Storage is the associated installation to CYFRONET-CLOUD-CPU supporting the EGI Online Storage. This installation has delivered 1,785 TB month of the initially planned 1,800 during the complete project (99.18% of the available VA capacity for the installation was consumed). Similarly to the CPU installation, the allocated capacity was mainly consumed over the last five months of the project thanks to the enrollment of two use cases.

2.34 IICT-BAS-CPU

Description	The Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences (IICT-BAS) has a leading position among the scientific institutions in Bulgaria in the fields of Grid, Cloud and HPC computing, linguistic and semantic technologies, intelligent systems, signal and image processing. The institute is operating the supercomputer system Avitohol, which took 331st place in the top 500 list in June 2015 with a peak performance of 264,2 Tflops.
Task	3.3
URL	
Service Category	Infrastructure service

Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Bulgaria
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	Jun 2015
User definition	Single researchers, small and big communities

2.34.1 Metrics

Metric name	Baseli ne	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	150	Internal service database	0	0	0	0	0	0
CPU/hours	7,257,6 00	Accounting	0	0	0	0	0	0
No of countries reach	3	Check-in	0	0	0	0	0	0
Names of countries reach	Bulgari a, Albania ,	Check-in	-	-	-	-	-	-

(Germa				
r F	ny, Romani				
a F	a, Russia, Serbia,				
l	UK				

2.34.2 Assessment

The IICT-BAS-CPU installation was removed from the project as it the provider did not have the effort to integrate with the EGI infrastructure.

2.35 IICT-BAS-Storage

Description	The Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences (IICT-BAS) has a leading position among the scientific institutions in Bulgaria in the fields of Grid, Cloud and HPC computing, linguistic and semantic technologies, intelligent systems, signal and image processing. The institute is operating the supercomputer system Avitohol, which took 331st place in the top 500 list in June 2015 with a peak performance of 264,2 Tflops.
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	Bulgaria
Duration	M1-M30

Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	June 2015
User definition	Single researchers, small and big communities

2.35.1 Metrics

Metric name	Bas elin e	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	150	Internal service database	0	0	0	0	0	0
TB/month	180	Accounting	0	0	0	0	0	0
No of countries reach	3	Check-in	0	0	0	0	0	0
Names of	Bulga ria, Alban ia, Germ any, Rom ania, Russi a, Serbi							
countries reach	a, UK	Check-in	-	-	-	-	-	-

2.35.2 Assessment

This installation is associated with IICT-BAS-CPU and as such has not been able to deliver any capacity.

2.36 CLOUDIFIN-CPU

Description	CLOUDIFIN is a federated IaaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. CLOUDIFIN is a certified resource center of EGI, fully integrated with the federation.
Task	3.3
URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/cloud-compute/
Location	Romania
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, training, webinars and hands-on sessions during conferences and events.
Operational since	Mar 2017

User definition	Single researchers, small and big communities
	engle recourchere, entail and big communice

2.36.1 Metrics

Metric name	Base line	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	7	Internal service database	4	7	7	10	12	14
CPU/hours	17,84 9	Accounting	106,901	516,443	1,828,563	2,171,625	2,014,999	1,755,088
No of countries reach	2	Check-in	1	2	2	2	2	2
Names of countries reach	RO, IT	Check-in	Romania	Iceland, Romania	Iceland, Romania	Iceland, Romania	Iceland, Romania	Iceland, Romania

2.36.2 Assessment

CLOUDIFIN-CPU is the installation of IFIN-HH supporting the EGI Cloud Compute service in the EOSC Marketplace. As the installation delivered already 49% of the available VA capacity at M15, the capacity was increased from 5,000,000 to 6,900,000 CPU hours. At M30, it delivered 8,393,619 CPU hours (100% of the available VA capacity for the installation was consumed). The following VOs were supported over the period: vo.access.egi.eu and perla-pv.ro, supporting 14 users from 2 countries.

2.37 CLOUDIFIN-Storage

Description	CLOUDIFIN is a federated IaaS Cloud provider of the EGI Cloud Compute service that offers users scalable and elastic resources on-demand controlled via APIs. CLOUDIFIN is a certified resource center of EGI, fully integrated with the federation.
Task	3.3

URL	
Service Category	Infrastructure service
Service Catalogue	https://www.egi.eu/services/online-storage/
Location	Romania
Duration	M1-M30
Modality of access	Services are free at the point of use. Access to the service require registration as an EGI user on Check-in and enrolment into a Virtual Organisation for authorisation
Support offered	Technical support is provided via the helpdesk central support team, and by the support team at the installation. EGI provides central documentation, trainings, webinars and hands-on sessions during conferences and events.
Operational since	Mar 2017
User definition	Single researchers, small and big communities

2.37.1 Metrics

Metric name	Bas elin e	Define how measurement is done	Period 1 M1-M5	Period 2 M6-M10	Period 3 M11-M15	Period 4 M16-M20	Period 5 M21-M25	Period 6 M26-M30
No of users	7	Internal service database	2	7	7	10	12	14
TB/month	0.32	Accounting	5	0.96	1	37	29	29
No of countries	2	Check-in	1	2	2	2	2	2

reach								
Names of	RO,							
countries reach	IT	Check-in	Romania	Iceland, RO	Iceland, Romania	Iceland, Romania	Iceland, Romania	Iceland, Romania

2.37.2 Assessment

CLOUDIFIN-Storage is the associated installation to CLOUDIFIN-CPU (IFIN-HH) supporting the EGI Online Storage. As the use cases of this installation had minimal storage requirements, the available units were adjusted from 3,600 TB month 180 TB month. At M30 the installation delivered 113 TB months out of the 18 available (62.78% of the available VA capacity for the installation was consumed). Users and use cases for CLOUDIFIN-Storage are the same as CLOUDIFIN-CPU.

3 Dissemination

In this section we report the list of events in the context of EGI-ACE that WP3 partners contributed to the project, reporting the number of attendees to measure the possible user interests.

Type of	Title	Date	Name of Event	Location	Type of	Reach	Scale
Activity					Audience		
Presentation	Infrastructure services: Highlights from the compute, data, security areas	2021/02/05	EGI-ACE public launch event	Online	Scientific Community, General Public	250	worldwide
Workshop	EGI-ACE Communities Workshop	2021/02/16-17	EGI-ACE Communities Workshop	Online	Scientific Community, General Public	150 people	worldwide
Webinar	Managing Singularity, Docker and udocker containers, and Kubernetes clusters in the EGI Cloud	2021/04/28	EGI Webinar 2021	Online	Scientific communities, and programmers who support research and education.	Num. of Participants: 39 Num. of Countries: 14	worldwide
Webinar	Deploying virtual infrastructures	2021/05/26	EGI Webinar 2021	Online	Scientific communities, for	Num. of Participants: 20	worldwide

Table 5. Dissemination activities related to WP3 installations

	with Infrastructure Manager (IM)				programmers and IT-service providers who support research and education.	Num. of Countries: 10	
Webinar	Using Dynamic DNS service in EGI Cloud infrastructure	2021/06/16	EGI Webinar 2021	Online	Scientific communities, developers, integrators and end users	Num.ofParticipants:20Num.ofCountries:8	worldwide
Webinar	Using EGI Cloud infrastructure with fedcloudclient	2021/09/29	EGI Webinar 2021	Online	Scientific communities, developers, integrators and end users	Num.ofParticipants:29Num.OfCountries:13	
Presentation	Dealing with dynamic and mixed workloads	2021/09/20-24	HTCondor Workshop Autumn 2021	Online	Developers, service admins, users	~100	Worldwide
Training event	Open stage - Show Us Your Toolbox	2021/09/20-24	HTCondor Workshop Autumn 2021	Online	Developers, service admins, users	~100	Worldwide
Panel discussion	HTCondor philosophy and architecture	2021/09/20-24	HTCondor Workshop Autumn 2021	Online	Developers, service admins, users	~100	Worldwide
Presentation	Running containers and Kubernetes in the EGI	2021/11/10	ARCOS Symposium	Online	Other: Australian providers, supporters of	25	Australia

	Federation				use cases		
Presentation	The EGI Federated Cloud: benefits for service providers and customers	2021/10/19	EGI Conference 2021	Online	IT providers, Research Community reps.	40	Global (mostly European)
Presentation	Using EGI Cloud infrastructure with fedcloudclient	2021/10/20	EGI Conference 2021	Online	IT providers, Research Community reps.	40	Global (mostly European)
Presentation	Using Dynamic DNS service in EGI Cloud infrastructure	2021/10/20	EGI Conference 2021	Online	IT providers, Research Community reps.	40	Global (mostly European)
Presentation	The EGI-ACE Cloud and HTC providers	2021/10/20	EGI Conference 2021	Online	IT providers, Research Community reps.	40	Global (mostly European)
Presentation	The expanding EGI computing landscape	2022/03/16	Open Science Grid All Hands Meeting	Online	Service providers and scientific user communities from the US		US
Presentation and panel	Cloud computing with the EGI Federated Infrastructure: Status and	2022/06/01	ISC High Performance 2022		IT providers, Researchers	100	Global (mostly European)

	Future Outlook						
Presentation	Cloud and HPC Computing in the EGI Federated Infrastructure	2022/07/13	IEEE INTERNATION AL SYMPOSIUM ON CONVERGENC E OF CLOUD & HPC	Barcelona, Spain	Researchers	40	Worldwide
Training session	Training: Infrastructure as Code to deploy scientific applications in EOSC	2022/09/20	EGI Conference 2022	Prague, Czech Republic	Researchers, Scientists	30	Europe
Poster	Managed Kubernetes — Next Gen Academic Infrastructure?	2022/09/20	EGI Conference 2022	Prague, Czech Republic	Researchers, Scientists	30	Europe
Presentation	Container execution and management at a European scale	2023/06/20	EGI Conference 2023	Poznan, Poland	Researchers, Scientists, IT providers, Research Community reps.	150	Europe
Demo	FedCloud client and FedCloud generic	2023/06/20	EGI Conference 2023	Poznan, Poland	Researchers, Scientists, IT providers, Research	10	Europe

	services: Dynamic DNS and Secret management				Community reps.		
Session	OpenStack: Experience, challenges , solutions to OpenStack operations in the EGI Federation	2023/06/21	EGI Conference 2023	Poznan, Poland	IT providers	50	Europe
Presentation	Using FedCloud client to integrate external tools with EGI Federated Cloud	2023/06/21	EGI Conference 2023	Poznan, Poland	IT providers	50	Europe
Training	Training: Processing Data from EOSC on EGI Compute resources training	2023/06/22	EGI Conference 2023	Poznan, Poland	IT providers	5	Europe

4 Satisfaction

In this chapter we report the satisfaction on the WP3 installations are reported by EGI Customer interviews and the number of orders coming from the EOSC Portal.

4.1 EGI Customer satisfaction reviews

EGI regularly interviews Communities using the services with an active Service Level Agreement (SLA), in order to measure the satisfaction and discuss possible issues. The level of satisfaction is measured from 1 (min) to 5 (max). For what concerns the first period of the EGI-ACE project the communities using EGI-ACE WP3 services interviewed are reported in table 6 (for those communities with several interviews in the period, only the last one is reported). Those issues or feature requests collected in the table are processed and added as technical requirements for the EGI services affected.

Community	WP3 installations used	Level of satisfactions and comments	Issues/featurerequestsreportedwithWP3installations
Fusion	EGI Cloud Compute	5: very satisfied	
EISCAT-3D	EGI Cloud Compute EGI Online Storage	5: very satisfied	
OpenBioMaps	EGI Cloud Compute EGI Online Storage	5: Very satisfied	It is very complicated system, when it come to detailed integration, it's hard to understand different services' capacities, what can do and what couldn't. It is not easy to

Table 6. Communities interviewed during the M16-M30

			exploit the service potential.
ENES	EGI Cloud Compute EGI Online Storage	5: very satisfied Unlike the initial legal difficulties in reaching an agreement for the integration with the Check- in, everything went well with no relevant issues preventing the service from provisioning and operating.	
MINKE	EGI Cloud Compute EGI Online Storage	3. Somewhat satisfied VMs were not reachable during the summer holidays due to a maintenance and the customer was not informed. This is a production service and it requires high monthly AVA/REL.	The granularity of the REL/AVA should be at least weekly (not monthly).
EMSO-ERIC	EGI Cloud Compute EGI Online Storage	4: Satisfied Resources delivered as expected but there were downtime at INFN-CLOUD- BARI that impacted on the operation of some EMSO-ERIC services. The new set-up IaaS at CESGA is suitable for EMSO (lower footprint).	Some level of automation would be desired to increase the quota allocated to the provider(s).
NBIS	EGI Cloud Compute EGI Online Storage	4: Satisfied There was an issue at TR-FC1-	

		ULAKBIM with the creation of the snapshots of VM. Now solved.	
OGC Sensor Things API for Citizen Science (Cos4Cloud project)	EGI Cloud Compute EGI Online Storage	<i>4. Satisfied</i> There was a temporary issue with the Ceph file system related to disk failure at IFCA in April 2022.	
BELLE-II	EGI Cloud Compute EGI Online Storage	5: very satisfied	
Terradue	EGI Cloud Compute EGI Online Storage	3: Somewhat satisfied The customer had not time to full exploit the resources allocated by EGI, in particular due to dependencies of the original business case with the EGI Check-in (API automation)	
Perovskite material studies	EGI Cloud Compute EGI Online Storage	5: very satisfied	
WeNMR	EGI Cloud Compute EGI Online Storage EGI High-Throughput Compute	5: very satisfied	
Biomed	EGI Cloud Compute EGI High Throughput Compute EGI Online Storage	5. Very satisfied – services run smoothly, less and less issues, things are going well	
OBSEA	EGI Cloud Compute EGI Online Storage	5: very satisfied	
CLARIN	EGI Cloud Compute	5: very satisfied	

	EGI Online Storage		
PLOCAN	EGI Cloud Compute EGI Online Storage	5: very satisfied	Understand the process better when setting up the VO, applying for services, lack of understanding to start with
BioISI	EGI Cloud Compute EGI Online Storage Infrastructure Manager	5: very satisfied	
Peachnote	EGI Cloud Compute EGI Online Storage	5. Very satisfied	Transfer speed between VMs and the Object Storage is not great, this was left as a general comment and will be reported as a suggestion for improvement while getting in touch with the provider.
GEO-DAB	EGI Cloud Compute EGI Online Storage	5: very satisfied	

4.2 EOSC Portal orders

For the services that have been registered on the EOSC Portal, we report here the statistics of the orders during the project duration. EGI Cloud Compute is the service with more orders in the EOSC Portal during the M1-M30 period (14% of the total number of the orders placed within the EOSC Marketplace were submitted to this service).

Table 7. Number of Orders from the EOSC Marketplace related to WP3 installations

EOSC Portal Service	Number of orders
EGI Cloud Compute	78

EGI Cloud Container Compute	9
EGI Online Storage	20
EGI High Throughput Compute	3
Infrastructure Manager	5