Towards the clouds together

European collaboration on cloud service delivery

KIFÜ GÉANT cloud kick-off event

Mohácsi János, K+F főosztályvezető

HBONE Workshop 2018, Balatongyörök

2019.02.14

Tartalom

- Mi az a GÉANT Cloud szolgáltatás
- Szolgáltatási fajták
- KIFÜ szerepe – intézmény szerepe
- GÉANT CloudService és Oktatási felhő (C4E)
- Következő lépések

![GÉANT]

40 European
National Research and Education Networks
(NRENs)

Collaborate in their European association GÉANT:
Network, Identity Management, Services above
net (Clouds)

Community of 10.000 organisations
with 50 million users
1 digital single market

Collective hybrid cloud approach
- EXTERNAL: jointly procure public clouds from commercial suppliers
- INTERNAL: share sector specific community clouds

Together, establish right conditions of use:
services that are safe and easy to use,
accessible, affordable and interoperable

NORWAY*
UNINETT

SWEDEN*
SUNET

FINLAND*
CSC

ESTONIA
EENet

LATVIA
Ministry of Science and Education

DENMARK*
DeiC

LITHUANIA
LITNET

BELARUS
UIIP NASB

IRELAND
HEAnet

UNITED KINGDOM
Janet

NETHERLANDS
SURFnet

GERMANY
DFN

POLAND
PCSS

BELGIUM
Belnet

LUXEMBOURG
RESTENA

CZECH REPUBLIC
CESNET

SLOVAKIA
SANET

AUSTRIA
ACOnet

HUNGARY
HUNGARNET

MOLDOVA
PENAM

FRANCE
RENATER

SWITZERLAND
SWITCH

SLOVENIA
ARNES

ROMANIA
RoEduNet

CROATIA
CARNet

SERBIA
AMRES

ITALY
GARR

MONTENEGRO
MREN

BULGARIA
BREN

GEORGIA
GRENA

SPAIN
RedIRIS/RED.ES

ALBANIA
ANA

MACEDONIA
MARnet

ARMENIA
ASNET-AM

AZERBAIJAN
ANAS

PORTUGAL
FCT|FCCN

GREECE
GRNET

TURKEY
ULAKBİM

MALTA
University of Malta

CYPRUS
Cynet

ISRAEL
IUCC

There is community demand for cloud

But it is important to ensure that …

GET IN

Assure data is handled safely and meets European and national regulations - GDPR

Acquire and use services through the institutions' structures:

- Affordable and predictable cost and purchasing models (prevent bill shock)
- Limit network traffic costs and provide network integration
- Log in with institutional account

GET OUT

Be able to move data (to another provider)

Europe

Largest producer of research
data in the world.
But IT infrastructure is
insufficient and too fragmented.
Which leads to an
underutilisation of big data.
EC wants to strengthen and
interconnect
research IT infrastructure,
through the **European Open
Science Cloud**.

Meeting user needs and
Aligning cloud collaboration areas

Most popular providers
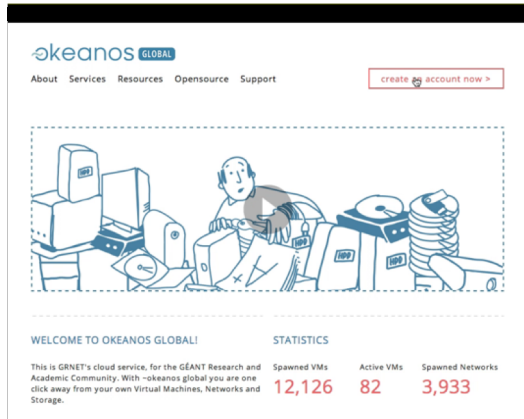 as mentioned by European NRENs
(in alphabetical order)
- Amazon Web Services
- BOX
- Google Apps
- Microsoft Azure
- Microsoft Office 365
- OwnCloud

COLLABORATION SERVICES

REALTIME COMMUNICATION

E-learning and education services

FILE STORAGE AND SYNC

INFRASTRUCTURE AS A SERVICE
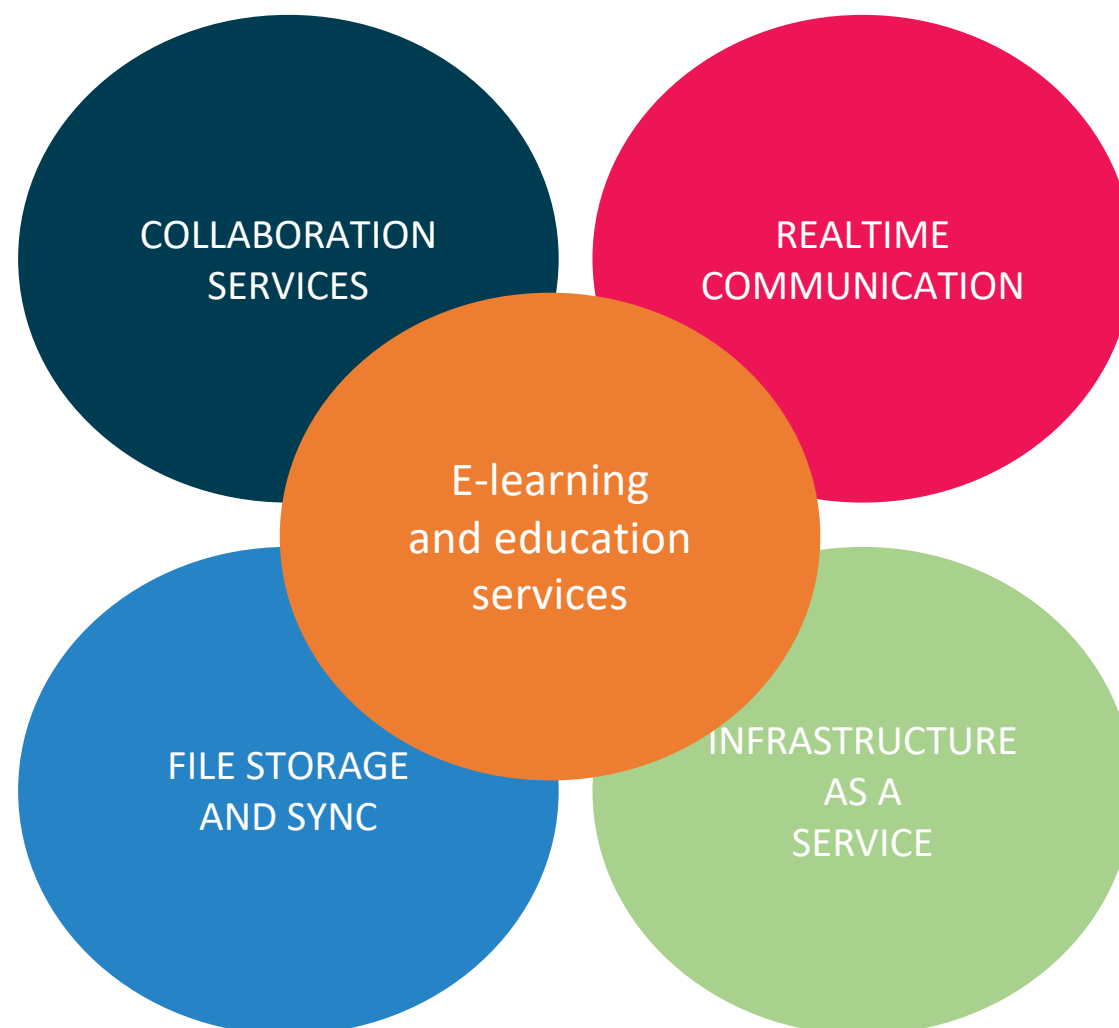
Scale up national community cloud solutions to a European level

Greek IaaS cloud
built and operated by GRNET
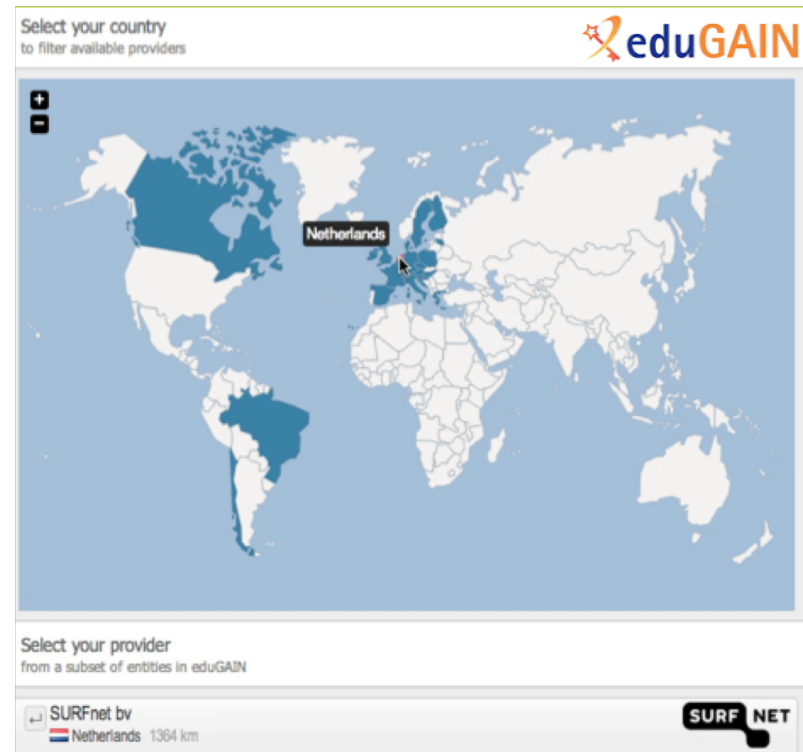
French web conferencing service
built and operated by RENATER
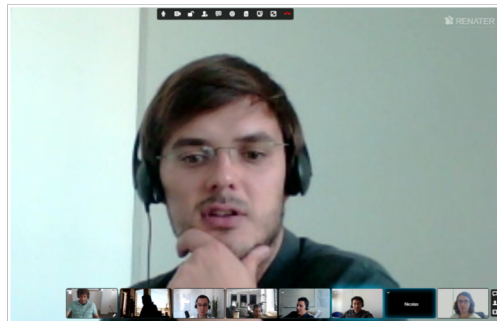
Accessible by whole
European Research and Education community
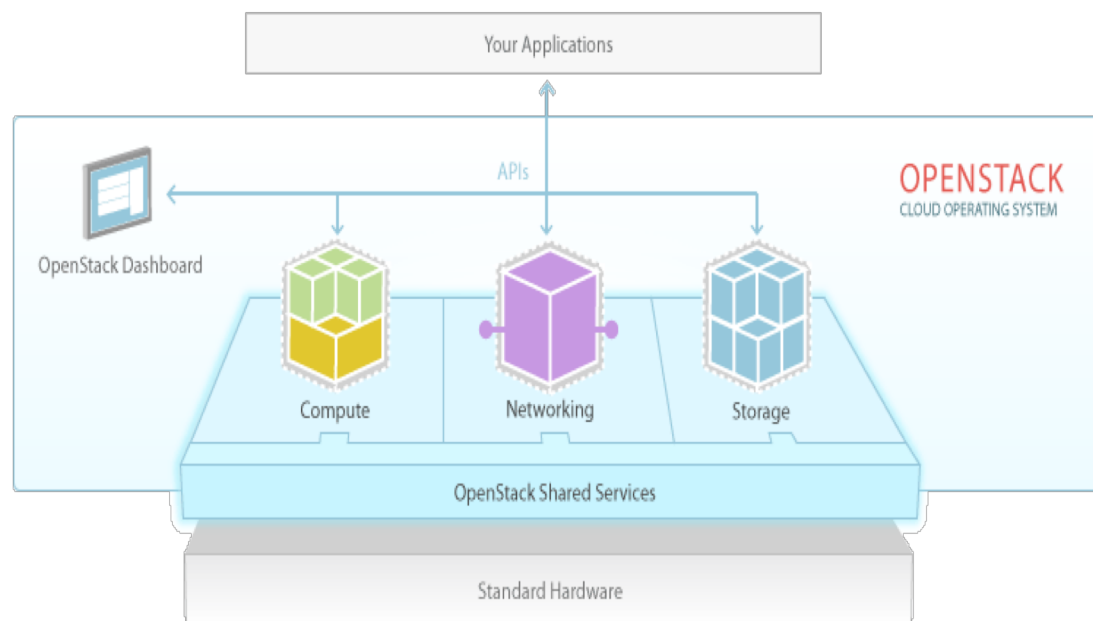Single sign-on
Log-in with institutional account

Oktatási Felhő

https://c4e.niif.hu

Kiemelkedő kapacitás

Akár a helyi infrastruktúra teljes kiváltására

Eldobható, nagy kapacitású labor gépek, rendszerek készítése

Cloud órák – virtuális oktatási környezet

eduID támogatás

Framework agreements

Results of a pan-European tender

Institutions can consume without the need to run a tender of their own

Provider quotation / educational offers

For use below tender thresholds

GÉANT Cloud Catalogue entries

Show provider capabilities to R&E community

1

2

3

Infrastructure as a Service (IaaS) in high demand

Pan-European tender

Through GÉANT
as cross-border, central purchasing body

Using EC Procurement Directive (2014/24/EU)

Framework

EU-wide joint procurement

Results: framework agreements
with suitable suppliers

Not winner takes all, but provide choice

12 different IaaS solutions, 23 providers

Framework agreements

NRENs bring the agreements

to institutions for consumption

Adoption and service support. Strategic collaboration.

Network: No data traffic charges.
Connect to GÉANT and NRENs networks over public IP.
Direct connect to institutions, Layer 2 point-to-point connections.

Exit support. Data portability.

Identity Management: SAML2 and eduGAIN.

Compliance with EU Data Security Directives.
Ability to offer IaaS from inside the EC / EEA.

General security policies. Handling of sensitive data (including public health or military research). Certifications.

Admin management portal. Customer self service portal. Order placement, reporting and group management.

Volume discount (initial discount and additional tiered discounted pricing). No price increase. Purchase order and post-paid billing. Recognising aggregated spending, combined for all participating institutions. Accommodating capital expenditure (upfront commitment).

Mechanisms to reduce costs for underutilised (or paused) cloud resources. Support for Bring Your Own License (use existing educational licenses). Migration of existing contracts.

API support.

Framework agreement with the following suppliers

- Amazon (AWS), through resellers: Arcus, Comparex, Telecom Italia,

- Cloudsigma

- Dimension Data

- Interoute

- itSoft

- KPN

- Lattelecom

- Microsoft, through resellers: Atea, Cacttus, Comparex, Dom-Daniel, Infosoft, Micromail, Nextsense, Novabase, SoftwareOne, Span and Ymens

- NTT Europe

- T-Systems

- Telecom Italia

- Vancis

Joint NREN IaaS tender in GÉANT

IaaS in high demand by community

36 NRENs
establishing framework agreements with
suitable suppliers

Not winner takes all, but provide choice

NRENs bring the agreements
to institutions for consumption

GÉANT, the NRENs and their Institutions that are part of this tender can use its outcomes without additional procurement required

There is no obligation whatsoever on the Customers to purchase, and the are entitled to run their own procurement to purchase any products covered within this contract

Name of Institution/td>	Type	ZIP	City
Magyar Táncművészeti Egyetem	felsooktatási_intezmeny	1061	Budapest
MTA Közgazdaság- és Regionális Tudományi Kutatóközpont Regionális Kutatások Intézete	kutatointezet	9022	Győr
Sárospataki Református Teológiai Akadémia	felsooktatási_intezmeny	3950	Sárospatak
Károli Gáspár Református Egyetem Tanítóképző Főiskolai Kar	felsooktatási_intezmeny	2750	Nagykőrös
NAIK Szőlészeti és Borászati Kutatóintézete	kutatointezet	8261	Badacsonytomaj
NAIK - Állattenyésztési, Takarmányozási és Húsipari Kutatóintézet	kutatointezet	2053	Herceghalom
MTA Közgazdaság- és Regionális Tudományi Kutatóközpont Regionális Kutatások Intézete	kutatointezet	5600	Békéscsaba
Pápai Református Teológiai Akadémia	felsooktatási_intezmeny	8500	Pápa
Újfehértói Gyümölcstermesztési Kutató Kht.	kutatointezet	4244	Újfehértó
MTA Közgazdaság- és Regionális Tudományi Kutatóközpont Regionális Kutatások Intézete	kutatointezet	6000	Kecskemét
Haszonállat-génmegőrzési Központ	kutatointezet	2100	Gödöllő
MTA Pszichológiai Kutatóintézet	kutatointezet	1068	Budapest
Bács-Kiskun Megyei Kórház Szegedi Tudományegyetem Általános Orvostudományi Kar Oktató Kórháza	felsooktatási_intezmeny	6000	Kecskemét
MTA Ökológiai és Botanikai Kutatóintézete	kutatointezet	2163	Vácrátót
Tomori Pál Főiskola	felsooktatási_intezmeny	1223	Budapest
Magyar Képzőművészeti Egyetem	felsooktatási_intezmeny	1063	Budapest
Országos Frédéric Joliot-Curie Sugárbiológiai és Sugáregészségügyi Kutató Intézet	kutatointezet	1221	Budapest
Edutus Főiskola	felsooktatási_intezmeny	1114	Budapest
Moholy-Nagy Művészeti Egyetem	felsooktatási_intezmeny	1015	Budapest
Balassi Bálint Intézet	kutatointezet	1016	Budapest
Nemzeti Agrárkutatási és Innovációs Központ, Élelmiszertudományi Kutatóintézet	kutatointezet	1022	Budapest
Semmelweis Egyetem Egészségügyi Főiskolai Kar	felsooktatási_intezmeny	1046	Budapest
Az 1956-os Magyar Forradalom Történetének Dokumentációs és Kutató Intézete Közalapítvány	kutatointezet	1074	Budapest
Liszt Ferenc Zeneművészeti Egyetem	felsooktatási_intezmeny	1077	Budapest
Országos Rabbiképző Zsidó Egyetem	felsooktatási_intezmeny	1084	Budapest
Színház- és Filmművészeti Egyetem	felsooktatási_intezmeny	1088	Budapest

How to use the available services?
Call-offs

OPTION 1

Use as is, via a **Direct award**
 default terms and conditions

Use the conditions as established via the GÉANT tender
(no 'customisation')

Pick the supplier of your choice
Sign the call-off agreement
Use the service

No need to clarify
why you selected a particular provider

OPTION 2

Customise, through a **Mini competition**
 apply add-ons

Ask additional questions
to the suppliers selected by GEANT.

Evaluate their answers, select a winner

Use the call-off agreement from GEANT and add additional clauses as needed

Cloud Vendors for Hungary

OIP

Online cloud catalogue 'IaaS service matrix' to display results

Framework delivery overview
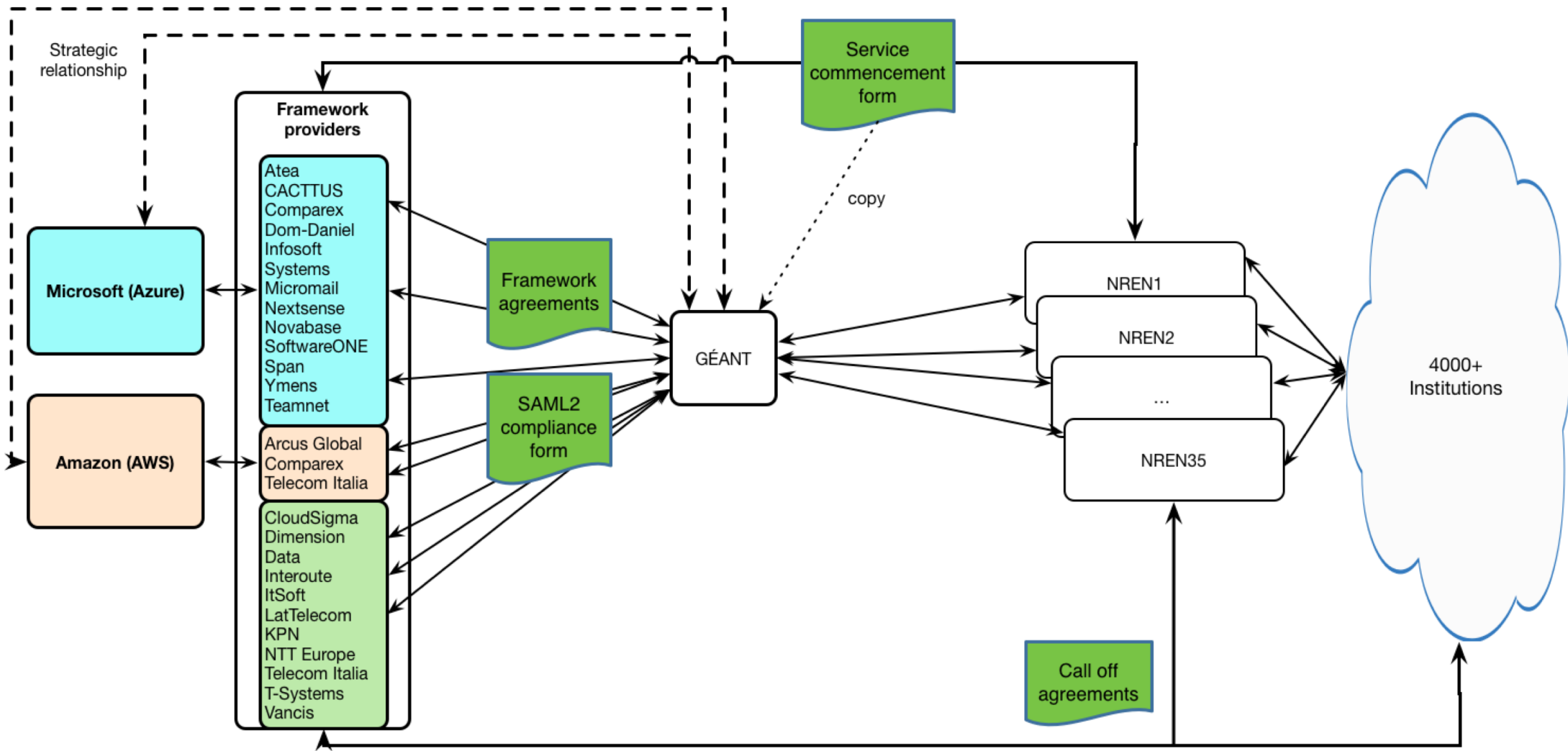
Microsoft Azure

Microsoft Azure

- To Resellers for supporting Microsoft desire to be on the framework and undertaking the responsibility to manage commercial relationships with GÉANT, NREN and their Research and Education sector members

Azure regions

Azure is generally available in 32 regions around the world, and has announced plans for 6 additional regions. Geographic expansion is a priority for Azure because it enables our customers to achieve higher performance and it support their requirements and preferences regarding data location.

Explore products per region ▶

Canada East
Canada Central
US Gov Iowa
Central US
West US 2
West US
US Gov Arizona
North Central US
US DoD East
East US
East US 2
US Gov Virginia
US DoD Central
West Central US
US Gov Texas
South Central US

UK South
North Europe
UK West
West Europe
Germany Northeast
Germany Central
France Central
France South

Korea Central
Korea South
China North
Japan East
Japan West
China East
East Asia
West India
Central India
South India
Southeast Asia

● Generally available
▲ Coming soon

Brazil South

Australia East
Australia Southeast

Platform Services

Security & Management

- 🔒 Security Center
- Azure Portal
- Azure Active Directory
- Azure AD B2C
- Multi-Factor Authentication
- Automation
- Scheduler
- Key Vault
- Store/ Marketplace
- VM Image Gallery & VM Depot

Media & CDN

- Media Services
- Media Analytics
- Content Delivery Network

Integration

- API Management
- BizTalk Services
- Logic Apps
- Service Bus

Compute Services

- Container Service
- VM Scale Sets
- Batch
- RemoteApp
- Dev/Test Lab

Application Platform

- Web Apps
- Mobile Apps
- API Apps
- Cloud Services
- Service Fabric
- Notification Hubs
- Functions

Developer Services

- Visual Studio
- Mobile Engagement
- VS Team Services
- Xamarin
- Application Insights
- HockeyApp

Data

- SQL Database
- SQL Data Warehouse
- DocumentDB
- SQL Server Stretch Database
- Redis Cache
- Storage Tables
- Azure Search

Intelligence

- Cognitive Services
- Bot Framework
- Cortana

Analytics & IoT

- HDInsight
- Machine Learning
- Stream Analytics
- Data Catalog
- Data Lake Analytics Service
- Data Lake Store
- IoT Hub
- Event Hubs
- Data Factory
- Power BI Embedded

Hybrid Cloud

- Azure AD Health Monitoring
- AD Privileged Identity Management
- Domain Services
- Backup
- Operational Analytics
- Import/Export
- Azure Site Recovery
- StorSimple

Infrastructure Services

Compute

- Virtual Machines
- Containers

Storage

- Blob
- Queues
- Files
- Disks

Networking

- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
- App Gateway

Datacenter Infrastructure (32 Regions, 24 Online)

Build and run open source solutions

Any tool, application, framework

Applications	WordPress, Drupal, OPENSHIFT ENTERPRISE by Red Hat, CLOUD FOUNDRY
Applications	
DevOps	CHEF, ANSIBLE, GitHub, puppet labs
Frameworks	Microsoft .NET, node, python, Java, php, R
Databases & middleware	cloudera, Hortonworks, MariaDB, cassandra
Containers	docker, DC/OS, CoreOS
Infrastructure	DC/OS, redhat, CONSENSYS, blockstack, ubuntu, docker, FreeBSD

Azure Benefits for GEANT members

Take advantage of new offers, services and additional ways to maximize savings

Leverage Software Assurance investments

Save up to
45%
on Windows and SQL VMs

Azure Hybrid
Use Benefit and License Mobility

Pre-commit to future compute usage

Save up to
60%
vs hourly

Azure Compute Pre-Purchase*
and Azure Compute Option

Benefit from significant savings on storage

Save up to
38%
vs web pricing

Lowest price for storage

* Will be replaced with ability to reserve capacity for virtual machines in 2018

Microsoft ExpressRoute

Dedicated, private L2 connection
between an institution and
the Microsoft cloud (Azure, Office 365)

Strong community demand
- Secure
- Guaranteed bandwidth
- Extend institutional network into the Microsoft cloud

Previously, required third parties:
- Outside of NREN domain
- Expensive

Now, GÉANT – Microsoft agreement
allows NRENs to offer ExpressRoutes to their
institutions; removing the third-party cost component

Two connections
from Microsoft in Amsterdam
via SURFnet to GÉANT
- In Amsterdam at NetherLight
- In London at GÉANT Open

10 Gbps

*GÉANT is the first non-commercial entity
to have such an agreement with Microsoft*

Amazon AWS

AWS Building blocks

TECHNICAL & BUSINESS SUPPORT
- Support
- Professional Services
- Partner Ecosystem
- Training & Certification
- Account Management
- Solutions Architects
- Security & Pricing Reports

AWS MARKETPLACE
- Big Data & HPC
- Business Apps
- Security
- Development
- Backup
- Databases
- Industry Solutions

MANAGEMENT TOOLS
- Queuing
- Notifications
- Search
- Orchestration
- Email

PLATFORM SERVICES

Analytics
- Data Warehousing
- Hadoop
- Streaming
- Data Pipelines
- Machine Learning

Mobile
- Sync
- Identity
- Push Notifications
- Mobile Analytics
- Mobile Backend

Development
- Containers
- Source Code
- Build Tools
- Deployment
- DevOps

App
- Mobile & Web Front-end
- Functions
- Identity
- Data Store
- Real-time

ENTERPRISE APPS
- Virtual Desktops
- Sharing & Collaboration
- Email & Calendaring
- Directories
- Storage Gateway

HYBRID CLOUD MANAGEMENT
- Direct Connect
- Identity Federation
- Deployment
- Backups
- Integrated Management

SECURITY & MANAGEMENT
- Virtual Private Networks
- Identity & Access
- Encryption Keys
- Configuration
- Monitoring
- Dedicated

INFRASTRUCTURE SERVICES
- Regions
- Availability Zones
- Compute
- Storage Objects, Blocks, Files
- Databases SQL, NoSQL, Caching
- Networking
- CDN

amazon web services

Global AWS Regions

Americas
- AWS GovCloud (2)
- US West
- Oregon (3)
- Northern California (3)
- Northern Virginia (5)
- Ohio (3)
- Montreal (2)
- São Paulo (3)

Europe
- Ireland (3)
- Frankfurt (2)
- London (2)
- Paris

Asia Pacific
- Singapore (2)
- Sydney (3)
- Tokyo (3)
- Seoul (2)
- Mumbai (2)
- Beijing (2)
- Ningxia

AWS Region = A cluster of Availability Zones
Availability Zone = A cluster of data centers

All regions are sovereign, meaning your data never leaves that location unless you cause it to.

amazon
web services

Videoconference Tender

On-premises solution
in both managed and unmanaged scenarios

Buying software licenses with optional support / management

Baseline requirements:
SAML2,
WebRTC (clientless) support,
Mobile/Desktop clients,
Fully documented API,
Recording, streaming,
webinar features

Two pricing models:

- Concurrent user/port model
- Concurrent room / call model

Contracts awarded to:

1. Mobile Video Communication GmbH (Germany) offering Cisco and Acano software
2. Zoom Video Communications, Inc. (USA) offering Zoom software
3. VisionsConnected BV (Netherlands) offering Pexip and Qumu software

Call-off contracts available to only NRENs in GÉANT

Interacting with the following cloud providers

Working towards an educational quotation service offer

slack

Realtime messaging

wire

box

Online file storage
(sync & share)

Dropbox

ownCloud

Nextcloud

Office 365

Google

Online collaboration
Machine Learning &
Artificial Intelligence services

GÉANT IaaS Cloud és Oktatási felhő (C4E)

GÉANT CloudService
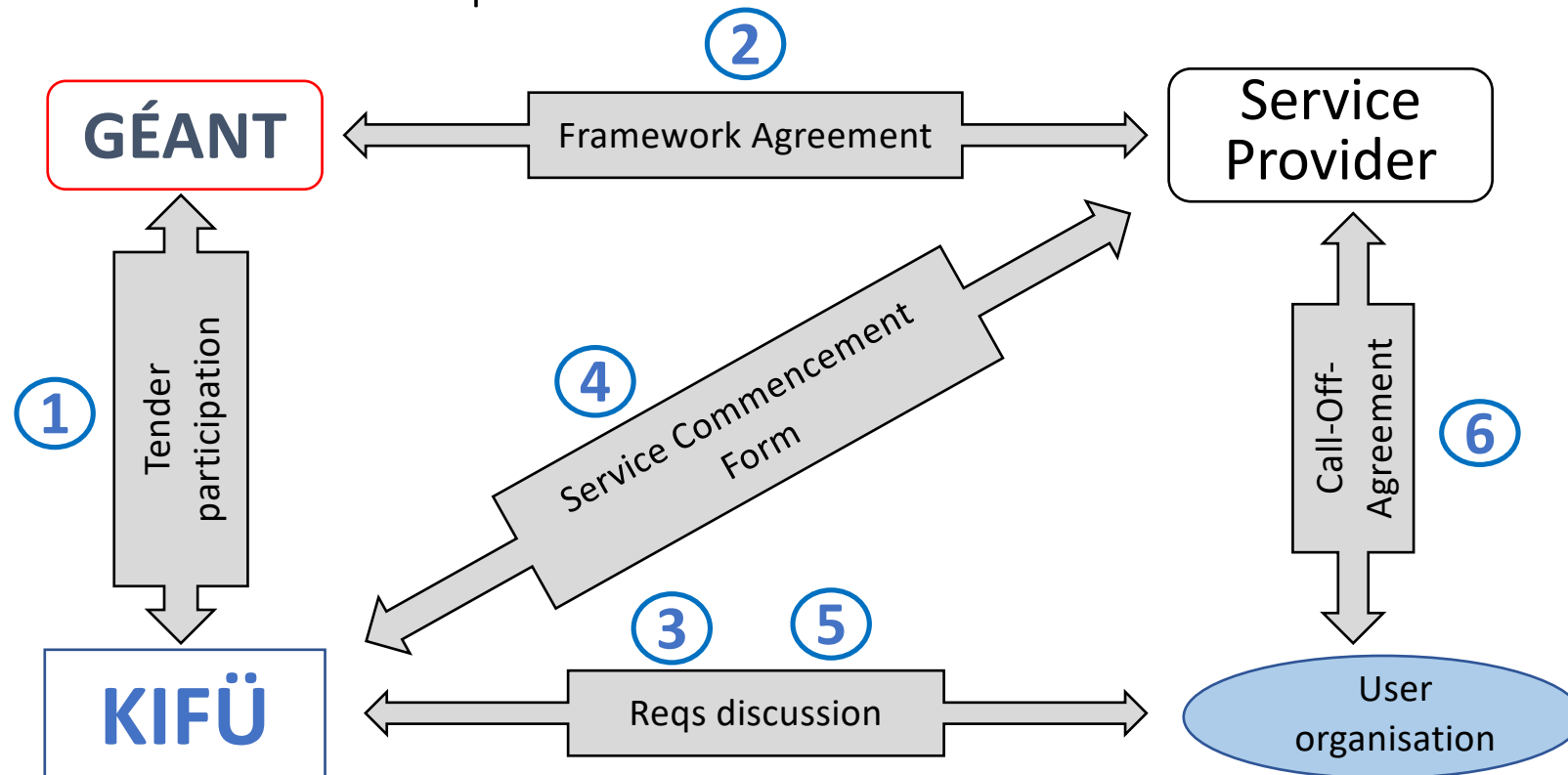
- Vendor lockin?
- Mindenképpen kell egy vállalási szint, használatarányos fizetés
- Jól skálázható
- Magyarországon kívüli adatközpont

C4E

- Föderatív modellben kerül fejlesztésre, szabványos interfészek
- Van "ingyenes" szint
- Közepesen skálázható
- Adat nem hagyja el az NREN-t

GÉANTCloudServices

Contractual Relationships

KIFÜ GÉANT cloud status

- GÉANT Cloud elindult – KIFÜ jogilag megvizsgálta a beszerzéseket – találtak EU közbeszerzés konform, és nem EU közbeszerzés konform beszerzést. – 2018 aug.

- GÉANT Cloud pilot szolgáltatás (2019-20) – felmérés, szolgáltatás nyújtás elindítás, workshop

- 2019-ben a GÉANT Cloud IaaS szolgáltatás közvetítéséért 0%-os járulék, Később 0-5% között várható

- Szerződések
  - Az IaaS beszerzések a EU közbeszerzési előírásoknak megfelelő UK közbeszerzési keretek között kerültek lebonyolításra. A magyar biróság joghatóságát ki kell kötni.
  - 2018-ban frissítve lettek GDPR-nek megfelelően
  - Kockázatelemzést célszerű végezni a felhőben történő tárolás előtt

- Támogatás és Kapcsolat: ugyfelszolgalat@kifu.gov.hu

- Tapasztalatcsere lista: geant-cloud-discuss@listserv.niif.hu

- Weboldal http://kifu.gov.hu/szolgaltatasok/ikt/felho/geant_cloud

GÉANT Cloud információk

- [GÉANT cloud aktivitás: - https://clouds.geant.org](https://clouds.geant.org)

- Ajánlattevők képességei [- IaaS Service Matrix](#) – https://catalogue.geant.org/reports/   eduGAIN védett

- [Szerződések -GÉANT Cloud Contract Repository](#) – https://intranet.geant.org/cloud_services_repository/ - eduGAIN védett

- GÉANT Data classification for Cloud Services - https://clouds.geant.org/data-classification-for-cloud-services/

Cloud and online services delivery in GN4-3

Deliver the clouds

INTERNAL: Share sector-specific community clouds (scale up national community clouds to a pan-European level);

EXTERNAL: Jointly procure public clouds from commercial suppliers

Help the NRENs to deliver these services locally in their respective countries;

current portfolio: file storage, IaaS, collaboration suites, web- and video conferencing,

Planned for 2018: educational services (Digital Learning Environments)

Widen the clouds; new service offerings (new service types to bring into the GÉANT portfolio):

including cloud security services, research specific tools

Deepen the clouds; including containers, Machine learning and Artificial Intelligence

Connect the clouds; network peerings and IdM middleware; ensure SAML2 compatibility and connect providers to eduGAIN.

Control the clouds

Cloud management platforms and marketplaces.

Legislation and regulations, including GDPR compliancy.

Standardisation: foster data interoperability and portability between different clouds.

Educate about clouds: NREN and GÉANT Cloud competency centers

Beyond the clouds; apply the cloud supply chain to other IT areas and products, such as: content, hardware and devices

Collaborate on clouds

Ensure the GÉANT cloud activity is well positioned within the European e-Infrastructure community and EOSC

Collaborate with NRENs and e-Infrastructure organisations outside of Europe (on a global scale)

GÉANT CloudServices
CONNECTING RESEARCH AND EDUCATION TO THE CLOUD

GÉANT Cloud kérdések?

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