

IaaS Framework Agreements

Pan-European Cloud Services ready for adoption

Dr. Jakob Tendel

GÉANT Cloud Service Delivery Team

German Research Network DFN

Belnet Networking Conference, Brussels

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- National Research Networks and GÉANT
- Cloud Services
- The GÉANT cloud computing tender
 - Available services from the tender
 - Use cases
- Outlook



X-WiN Fibre-Network

- >10 000km
- Longest PoP to PoP: 900km 25ms RTT

Networking Services:

- Optical wavelengths
- Layer-2 Circuits
- IP networking
- VPN
- DDoS protection

Additional Services:

- PKI / AAI
- Videoconferencing, VoIP
- DFN-Cloud Services



GÉANT At the Heart of Global Research and Education Networking



Flexible

-

Scalable

-

Elastic

**Diverse
Hardware
Capabilities**

**Always
Up-to-date**

Pay_{as-you}Go
vs
**Hardware
Investment**

Infrastructure-as-a-Service IaaS

- Cloud-hosted Virtual Machines
- Network Virtualization
- Simple VMs to whole clusters
- Tools to build scalable / elastic
- OS selection, software stack
- Own licenses possible

Platform-as-a-Service PaaS

- “Server-less”
- Selection of Data services:
 - Database
 - Compute
 - Analytics
 - Machine Learning
- Scaling/elasticity built in
- No VM/OS maintenance

Software-as-a-Service SaaS

- Specialized applications
- End-user-oriented
- Data synchronisation
- Continuous updates

Opportunities

- Better serve end users with modern services
- Quicker, more flexible procurement
- Potential money saving or achieving more
- Institutional IT can increase role as solution enabler
- Central procurement and management
- De-central usage

Challenges

- New way of operating
 - Different budgeting
 - Resource forecast
 - Cost monitoring
 - Account management/Quotas
- Cost comparison OnPrem – Cloud (TCO)
- Procurement hurdles
- Data protection, legal aspects
- Change management, personnel re-training



Unique innovation project

- Pioneering Cloud Delivery in Europe – first digital single market
- 36 participating NRENs through GÉANT
- Using EC Procurement Directive (2014/24/EU)
- 10 000 R&E institutions as a Digital Single Market
- 11 different IaaS solutions
- 21 providers, incl. Amazon & Microsoft resellers
- Open procurement – not winner takes all
- 4 year framework agreements



TENDER REQUIREMENT FULFILLED

PRICE DISCOUNTS
TERMS & CONDITIONS
GDPR COMPLIANT
PROCUREMENT



FEDERATED IDENTITY
MANAGEMENT & SINGLE SIGN-ON



NETWORK
PEERINGS
DATA EGRESS WAIVER



Direct-Connect

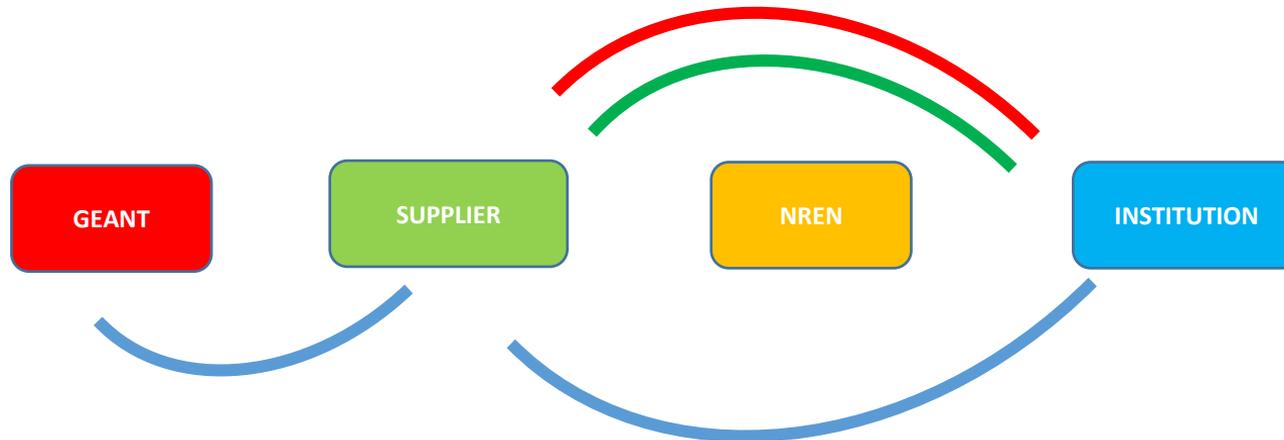


ExpressRoute

National deployments

GÉANT provides a **Framework Agreement** with each provider, under which institutions can buy the cloud services using a **Call-off Agreement**.

The **NREN** is an **intermediary**, making the **Framework Agreements** available in its country and helping **connected institutions** in purchasing from Suppliers.



1. Direct call off – if happy with GÉANT requirements and ranking
2. Mini-competition – for tailor-made solutions;
 - Technical
 - Operational (reporting requirements, etc.)
 - Legal (e.g. specific legal terms needed in the service agreement)
 - Financial (e.g. NREN cost recovery)



IaaS Framework Agreements (Belgium)

Original
Infrastructure
Provider



Sort by

Name of supplier

Filters

Show all resellers

Denmark

Show all capabilities

- IaaS Solution
- Data Transport
- Federated user authentication
- Data protection and security
- Commercial terms

	Aggregated Spen	Capital expenditu	Contract terms	Cost recovery fee	Data traffic	Direct network cc	EU Data Security	Exit support	General Data Sac	Identity manager	Identity manager	Idle server setups	Licensing requirei	Marketing and ad	Migrating existing	Offering	Post-paid billing	Pricing	Public IP network	Sensitive data	Service	Strateg	
Supplier A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier B	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier C	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier D	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier E	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier F	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier G	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier H	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier I	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier J	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier K	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supplier L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

ACB – General Data Security (Awarding Criteria)

R. Providers need to ensure secure, reliable and a legally compliant treatment of customer's data.

Q. Please describe in detail the policies and processes to ensure data security and data privacy in relation to the proposed services.

Response Guidance

- *Describe mechanisms to protect data at rest and in transit. *
- Describe how customer data transiting networks (Internet, inside your network, connection to 3rd parties) is protected against tampering and eavesdropping (e.g. network protection, use of

User Stories

clouds.geant.org/user-stories/

Lycée des Arts et Métiers-Luxemburg

The Challenge Lycée des Arts et Métiers (LAM) in Luxembourg offers a post-secondary education course on "Installation and Configuration of

[Read more.](#)

ROC Midden Nederland

Strategy: "Cloud Unless" ROC Midden Nederland, a secondary vocational education institution offering adult continuing education, enterprise training and training for

[Read more.](#)

Arcus College (Netherlands)

Why the cloud? Arcus College was no stranger to outsourced ICT services. Through a 2012 joint procurement arrangement for server,

[Read more.](#)

Quality & Qualifications Ireland (QQI)

Why the cloud? QQI needed to improve a vital, mission-critical legacy application that was operating on outdated hardware, inefficient software

[Read more.](#)

App Store for scientists

Together with the University of Bergen and the University of Oslo, UNINETT's HE Cloud Initiative (UH-sky) is working to demonstrate

[Read more.](#)

Educational clouds in Norway - Edulab

The UNINETT HE cloud initiative, UH-sky, together with the Norwegian University of Science and Technology (NTNU), is looking into how

[Read more.](#)

IT-Lab: Is it possible to move the university data centre to the cloud?

Why the cloud? In a collaboration with the University of Agder, UNINETT's HE Cloud Initiative (UH-sky) is exploring the possibility

[Read more.](#)

University of Stirling and Microsoft Azure helping to untangle airports

Nobody likes a delay at the airport. Many of us have spent time buckled up, ready for takeoff, wondering why

[Read more.](#)

Coventry University Hits £1 Million Savings Goal with Virtualised Network

When the Coventry University IT team was asked to cut £1 million from its budget, it turned to virtualisation technologies.

[Read more.](#)

University Gains Cost-Effective Disaster Recovery Solution

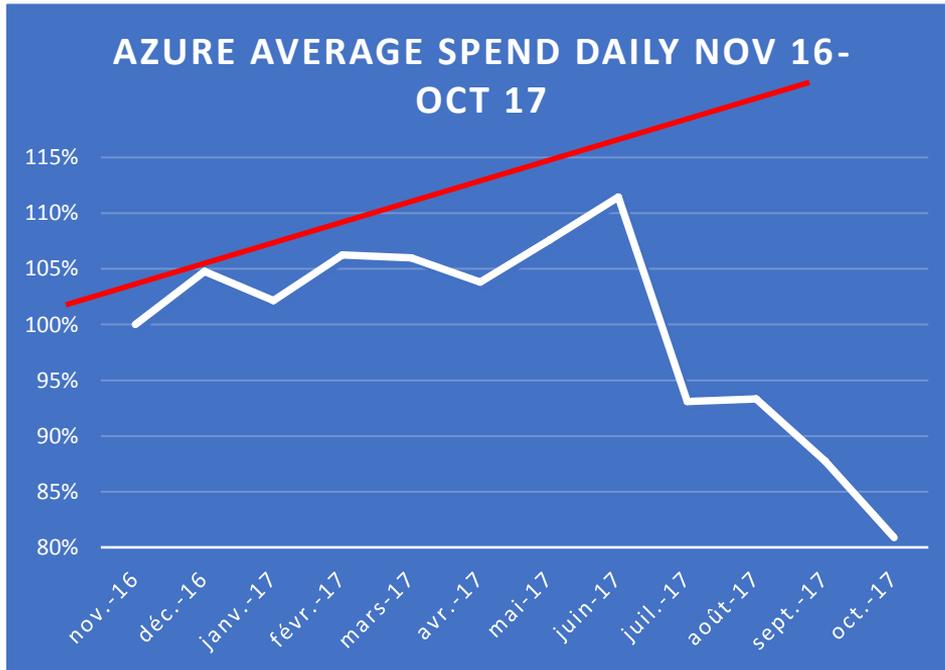
Marquette University didn't have an effective disaster recovery process in place because of the high cost and IT time required

[Read more.](#)

Quality & Qualifications institute (QQI) in Ireland achieves substantial savings with GÉANT Cloud Framework



Average daily spend Nov 2016 – Oct 2017



33% cost reduction

after QQI worked with the Irish NREN, HEAnet, to transfer their Microsoft Azure workloads to the GÉANT framework agreement,

from July 2017 onwards

- Full migration of datacentre to the clouds
- Hybrid cloud management portal - SURFcumulus
- Staff involvement and training
- From physical to virtual server administration
- Reduced hardware and maintenance costs
- Resources for educational innovation





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GÉANT CloudServices

Cloud news from GÉANT

Welcome to the GÉANT Clouds newsletter. Here you'll find stories, case studies, interviews, showcases, workshops, and receive this because you or your organization has expressed interest in GÉANT Cloud Activity. Feel free to forward it to interested contacts. For more information on how to subscribe or unsubscribe, look at the bottom of this newsletter.






The GÉANT cloud activity

Cloud services are in rapidly growing demand. End users are already using these services, often outside the control of the institutions and its established standards and governance controls. The users want the inherent benefits of cloud services; agility, scalability, free or pay as you go services. They want access to computing power, storage, file sync and share and collaboration services at the click of a mouse.

MEETING USER NEEDS

The NTFs in the GÉANT Cloud Activity are responding to the needs of R&E institutions and users throughout Europe, through our role as trusted advisors.

The GÉANT cloud activity is to:

- Provide faster and easier access to a range of essential cloud services by creating the right legal, procurement and technical environments.
- Create a strong community voice, based on the aggregation of demand across GÉANT members, to get the optimum technical and commercial solutions from vendors.
- Provide services adapted to common community requirements and standards, such as necessary.

COLLABORATION
NETS

RESEARCH
COMMUNITIES

FILE STORAGE
AND SYNC

INFRASTRUCTURE
AS A SERVICE

FOUR CLOUD SERVICE AREAS

Through broad consultation with European NTFs, the GÉANT Cloud Activity concentrates on four areas of cloud services. Based on the input from the NTFs, Infrastructure as a Service (IaaS) was selected as the first area to bring forward services.

More information:
<http://services.geant.net/clouds>

Contact us at: clouds@geant.net

COMMUNITY EFFORT

The European NTFs collaborating through the GÉANT Cloud Activity are:

CloudServices

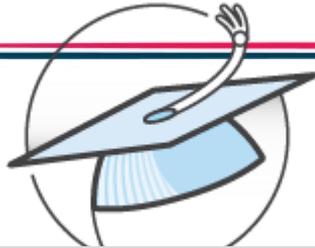
GÉANT CLOUD SERVICES

The GÉANT Cloud Activity's original 'clouds' team (CA) supports NTFs in delivering cloud and IaaS services to their communities with the right conditions of use, so that the benefits of the cloud can be fully realized and the risks managed. It provides a community point of contact to suppliers. The Clouds Exchange offers institutions and NTFs clarity about providers' capabilities and helps with the procurement of cloud services.

CloudServices

Networks • Services • People
13 June 2015

AWS Educate provides an academic gateway for the next generation of IT and cloud professionals. AWS Educate is Amazon's global initiative to provide students and educators with the resources needed to accelerate cloud-related learning endeavors.

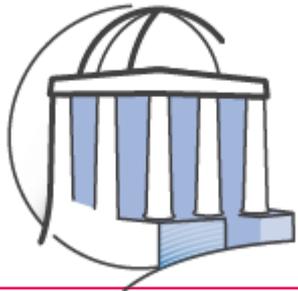


AWS and GÉANT are bringing the AWS Educate program to the European Research and Education community.

AWS will make available free AWS credits (vouchers) to students and educators, for hands-on experience of AWS cloud, access to AWS technology, open content for courses, training resources, and a community of cloud evangelists.

Access to AWS Educate takes place through the GÉANT InAcademia service.

InAcademia is a simple online validation service in a privacy preserving way. It allows online retailers to validate if a customer is a student or has any other affiliation to an education institute.



Real-Time Communications Framework



MVC is a provider and integrator of complete Unified Communication and Collaboration (UCC) solutions.



Kinly is a Dutch-based provider of Pexip and Qumu solutions. Kinly offers a suite of end-to-end video conferencing services

clouds.geant.org/video-real-time/

Preferential Cloud Service Conditions



clouds.geant.org/geant-cloud-catalogue/

Where do we go from here?

Better cloud service delivery

- Hybrid cloud delivery platforms
- Cloud security
- Connectivity and easy access

Provide more services

- Community cloud services
- Learning management, educational tools

Explore new areas

- Machine learning
- Artificial intelligence
- Container-based virtualization

Thank you! Any feedback, any questions?

clouds@geant.org

clouds.geant.org



- Various direct discounts
- Aggregate usage discounts
- Procurement and legal compliance
- Invoice billing, no credit card needed
- Mandatory SAML support (some eduGAIN)
- Direct peering with GÉANT network - no extra data transport charges
- Get in – get out support
- Full flexibility – to buy or not to buy





- Call-Off is made under UK regulation – guides available
- EU/EEA countries: if Directive 2014/24/EU on public procurement *is* properly adopted, NRENs who are subject to public procurement are free to use GÉANT as a centralised purchasing body
- EU/EEA countries: if Directive 2014/24/EU on public procurement *is not* properly adopted, NRENs can use centralised purchasing activities of GEANT by invoking direct application of the Directive
- **BREXIT-proof:** The framework remains legal even when the UK leaves the EU. Follow-on frameworks will remain under EU law from a new host country.
- **GDPR:** All provider frameworks now comply with GDPR.