

Access to advanced Global e-
infrastructures

What do you need from KENET?

**Half Day Research Infrastructure
Forum**

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Agenda

- Introduction
- KENET CA
- Identity Provider (IDP)
- COMODO SSL Certificates

e-Infrastructure

e-Infrastructure refers to a combination and interworking of;

1. digitally-based technology (hardware and software),
2. resources (data, services, digital libraries),
3. communications (protocols, access rights and networks), and
4. the people and organisational structures needed to support modern, internationally leading collaborative research be it in the arts and humanities or the sciences.

<http://www.rcuk.ac.uk/research/xrcprogrammes/otherprograms/einfrastructure/>

e-Infrastructure



e-Infrastructures are unique ICT-based infrastructures which empower researchers with an easy and controlled online access to facilities, resources and collaboration tools and enable the complex, multi-disciplinary and globalised practice of Digital Science

e-Infrastructure



e-Infrastructures may encompass high-capacity and high-performance communication networks (e.g. GÉANT), distributed computing infrastructures (grids and clouds), supercomputer infrastructures, simulation software, scientific data infrastructures and services and serve various user communities.

Aspects of e- infrastructures



Technology

Hardware - e-infrastructures make available hardware resources required in research activities such as modelling, simulation, data analysis and visualisation. Broad categories of these include;

- HPC
- Grid
- Cloud

Aspects of e- infrastructures



Technology

Software - e-infrastructures provide custom and highly specialized scientific software such as operating system images, collaboration tools, data analysis software, data visualization and workflow management tools for use by researchers undertaking novel research in various specialized fields.

Aspects of e- infrastructures



Technology - Resources

Data – e-infrastructures enable researchers to upload, save and share large volumes of research data, to access long term data storage and to find the data when they require it.

Services – Technical consultancy and support: Help is available for researchers and the communities to help them in working with the infrastructure. Help is available to identify the best solutions for their requirements and get scientific applications up and running.

Aspects of e- infrastructures



Technology - Communications

Access rights – Access to e-infrastructures requires authentication and authorization. This is achieved using certificates issued by certificate authorities and federated logins

Aspects of e- infrastructures



People

Virtual organizations - A Virtual Organization (VO) is a set of groups or individuals defined by some common cyber-infrastructure need.

This can be a scientific experiment, a university campus or a distributed research effort. A VO represents all its members and their common needs in a grid environment, and major projects.

e-Infrastructure



World Class Scientific Research with only broadband Internet



- **E-infrastructure allows a researcher at any KENET institution to access advanced research infrastructures in other parts of the world!**
 - **High performance computing, specialized scientific instruments, open research data**
 - **No additional local scientific infrastructure investments**
 - **But MoUs with owners of infrastructure or data required**
- **Researchers have to be on the KENET network for authentication**
 - **Free services only for NREN users**

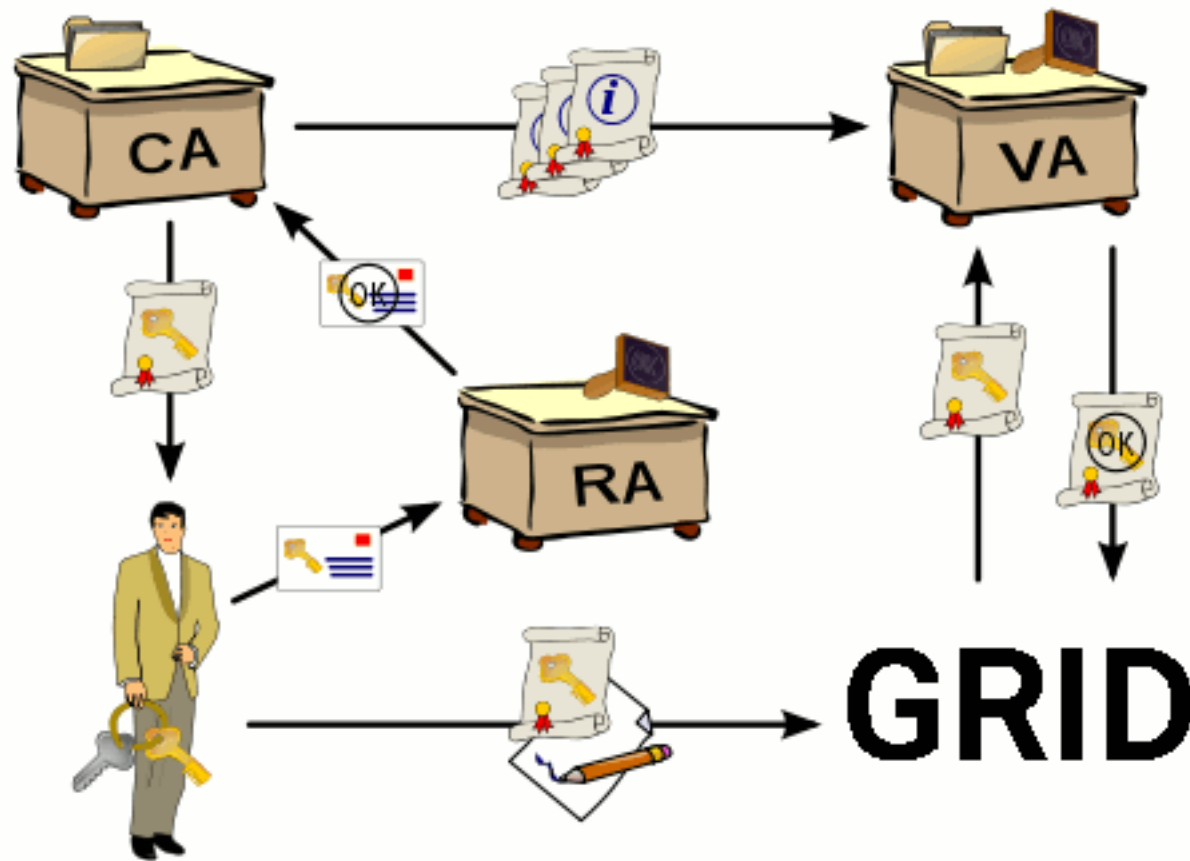
What Does a Researcher Need to Access Global E- Infrastructures

- A trusted entity to provide access to e-infrastructures
 - Digital certificates issued by trusted entity for users to access e-resources (secure access)
 - Trusted Identity Provider (one sign on)
- **KENET is the only Trusted Entity in Kenya for access to Global e-infrastructures**

About KENET CA

- A fully function online Certification Authority
- Accredited in January 2016 by EUGridPMA
- KENET CA issues
 - i. Personal certificates
 - ii. Server Certificates
- Certificates can be used on Firefox, Chrome and Explorer

How it works



Introduction to the Grid



- A grid is a co-operation of many different clusters (HPC) and research organizations
- No centralized user management
- Access is made possible through Virtual Organizations (VOs) and Private Certificates

Steps to obtain a Certificate



- Write an email to ca@kenet.or.ke
- Schedule a face to face meeting with RA
- Get added as a subscriber
- CA issues you with a token to generate the certificate
- Install certificate on your browser
- Make backup copy of the certificate

An Identity Provider (IdP)

- An Identity Provider (IdP), is responsible for
 - providing identifiers for users looking to interact with a system
 - asserting to such a system that such an identifier presented by a user is known to the provider
 - possibly providing other information about the user that is known to the provider.

The KENET IdP



- The KENET Identity Provider allows researchers to use a single identity when they sign into web pages and Science Gateways that require user authentication.
- The KENET IdP is a member of Grid IDentity Pool (GrIDP) federation and currently authenticates the users of several Service Providers including the Africa Science Gateway
- To register go to <http://idp.kenet.or.ke>

How does the IdP work?



The real value of Identity Federations are their Service Providers, in terms of number, diversity and quality

KENET is the Identity Provider for Kenya

The Africa Grid Science Gateway



Welcome | Applications

EI4AFRICA IS A FP7 PROJECT FUNDED BY THE EUROPEAN UNION

el4africa.eu
e-Infrastructures for Africa

Welcome

The Africa Grid Science Gateway is a standard-based web 2.0 demonstrative platform to show the lighthouse applications identified by the [el4Africa project](#), and execute them on a worldwide (Including Africa) e-Infrastructure.

The access to the Africa Science Gateway requires federated credentials issued by an Identity Provider. If the organization belongs to an Identity Provider, click on the "Sign in" link which appears in the top right corner of the page. Otherwise, get federated credentials registering to the "open" Identity Provider which belongs to the GridDP "catch-all" federation. If you have gotten your credentials, click on the "Register" link which appears in the top right corner of the page.

In order to run an application, select it from the Applications menu above. New applications can also be proposed to the Africa Grid Science Gateway. Interested people just need to fill in this [online survey](#) or to download this document and email it to info_AT_el4africa.eu.

Contact Us | Privacy Policy | Terms of Use
Follow us on the Social Networks, including the possibility to access the Africa Grid Science Gateway from within the Social Network page.

Facebook | Twitter | LinkedIn

Like You and 5 others like this.

Applications

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Show 10 entries

NAME	RUN PAGE	DOMAIN	MIDDLEWARE	INSTITUTION
ASTRA		Others	EMI-gLite,GARUDA	DANTE INFN UNICT
BES		High-Energy Physics	EMI-gLite	IHEP Consortium GARR
De Roberto DR		Others	EMI-gLite	INFN
G-HMMER		Life Sciences	EMI-gLite	UNIANDS Pontificia Universidad Javeriana Consortium GARR
GROMACS		Life Sciences	EMI-gLite,GARUDA	UNINETT Sigma UNIPG Consortium GARR UNIANDS
MERIS DR		Earth Sciences	EMI-gLite	Consorzio COMETA
Octave		Computer Science and Mathematics	EMI-gLite,GARUDA	INFN
Parallel		Demo	EMI-gLite,EMI-UNICORE,GARUDA	INFN
R		Computer Science and Mathematics	EMI-gLite,GARUDA,OurGrid	INFN
Sequential		Demo	EMI-gLite,EMI-UNICORE,GARUDA,Genesis II,GOS,OurGrid	INFN

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What Does a Researcher Need to Access Global E- Infrastructures



- KENET one of the few African NRENs that has setup both the Certification Authority and Identity Provider
 - <http://ca.kenet.or.ke> (first in sub-sahara Africa)
 - <http://idp.kenet.or.ke>

Getting Started



1. Establish your need
2. Read case studies to see what other researchers are doing e.g.
 - <https://www.egi.eu/case-studies/index.html>
 - <https://www.surf.nl/en/knowledge-base>
3. Browse Applications Database to see what software is available in your field. e.g.
 - <https://appdb.egi.eu/>
 - <https://www.surf.nl/en/services-and-products>

Getting Started



1. Get a digital certificate – KENET
2. Identify a grid computing network to join
 - European Grid Infrastructure - <https://www.egi.eu/case-studies/index.html>
 - The collaborative ICT organisation for Dutch higher education and research (Surf) - <https://www.surf.nl/en>
 - The Africa Grid Science Gateway - <https://sgw.africa-grid.org/>
3. Identify and join a relevant Virtual Organization
4. Request for resources through the manager of the VO.

The Africa Science Gateway

- Live Demo
- <http://sgw.africa-grid.org>

COMODO SSL Certificates

- **KENET facilitates issuance of **Free** Wildcard CoMoDo certificates**
 - for domain names (for secure websites, e-mail and data repositories)
 - Annual license per CoMoDo digital certificate is \$400 per domain
 - To apply write to support@kenet.or.ke



*Transforming education
through ICT*

Thank You

www.kenet.or.ke

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