The Science Cloud@DMZ

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Malaysian Research and Education Network (MYREN-X)

- MYREN has been in existence since 2005 and in October 2017 last year MYREN-X was launched.
- Starting from1st April, 2018 it will be handed over to a company owned by a consortium of Malaysian Public Universities
- Began deploying between 5 Gbps to 100 Gbps of connectivity to all campuses of public universities, polytechniques, college communities and agencies/regional departments with anticipated completion of June 2019
- Direct peering with Google and Facebook via MYIX for some time (Malaysians among world largest user)
- DMZ approach is proposed at least in the begining due to campus network challenges
- Greater emphasis on providing research and education services on top of the network

Historical Perspective of Grid/HPC

- During EUAsiaGrid Project (2007-2010) we established Academic Grid Malaysia and contributed computation to EGI from clusters at several universities
- All clusters are now running at individual institutions due to lack of funds to maintain as EGI certified sites. University of Malaya's clusters were consolidated into a centre called Data Intensive Computing Centre and serves mainly particle physics (CMS), structural biology and chemistry and others
- Researchers are crying for compute infrastructure for their research (unfortunately), and source it from PRAGMA, or Amazon
  - Malaysia is in dire need of computation infrastructure

The Science Cloud

- Single, Agile Cloud Computing Platform that caters for Research, Education and Enterprise computing needs
- Providing ICT services related to research and education computing and enterprise computing
- Modelled after Amazon Web Services and /or Microsoft's Azure Cloud
- Funding for this is still elusive due to across the board education budget cut but will continue to work on alternative sources with sustainability model

Research Computing Services

- High Performance Computing (HPC) On-Demand in all flavours: CPU, GPU and RAM
  - Science and Engineering research, Animation Rendering, Big Data, Machine Learning, AI
- Virtual Servers (VMs) including Bare Metals (BMs) and Storage provisioning for researchers
- Virtual Workbench for various domain specific analyses
- Research Clearing House (Storage)

Education Computing Services

- Massive Open Online Courses (MOOC)
- Distance Learning, On-Demand Learning and Life-Long Learning; (alpha-version Video Optimised On-Demand Learning Environment Voodle© should go live by April)
- Curriculum Management
- Online tutors

Communication and Collaboration

- Research and Education "DropBox" for sensitive data
- Secure Documents Collaboration
- Video Conferencing
- Unified Communication
  - IP-telephony and chat

Service Delivery Model

- Single Consolidated Infrastructure of Agile Cloud Platform using Opensource Technology;
  - eg INFN's ElectricINDIGO
- Infrastructure optimization for all services
- Operation by back-to-back service and maintenance agreements with local OSS companies
- International corporate partners with proven products

SIFULAN Malaysian Access Federation

- As a value-added service of MyIFAM expansion, it is natural progression to develop the trust framework for accessing resources and services that do not require highly secure environment (i.e maintain a comfortable level of assurance of at least user identity vetting; better than social identity (FBConnect, Google, etc))
- SIFULAN stands for Secure Identity Federation on Unified Lightweight Access maNagement
- Working together with GAKUNIN Japanese Academic Access Federation since 2014 to develop AAI for Malaysia.
- Running Pilot Production service with Partners from Czech Republic, NII, and now engaging library resource providers
- In the process of joining eduGAIN

SIFULAN Benefits

- Real identity vetting at every transaction
- Facilitating consortium for library resources subscription. Eg. by negotiating for better pricing; Working closely with Malaysian Citation Centre for Scholarly Output Management and Analytics
- Facilitating worldwide access for mobility of staffs and students; not bound by campus IP
- Easier account management without EZProxy drawbacks
- Possibility to link ORCID with SIFULAN identifier
- Working with library resource providers such as Clarivate/Thompson, Elsevier, EBSCO, and others. In contacts with Comodo, PingIdentity and Prestariang

Involvement in New Projects

- Disaster Mitigation Competency Centre Plus under Asi@Connect led by Taiwan and Thailand
  - Targetting Storm Surge, Floods, Forest Fire, etc
- Asian Soundscape Listening to The Ecosystem
  - Ultra soundscape - Eavesdropping the Impacts of Extreme Weather Events to Ultra Soundscape; recording the ultrasound of bats
- Collecting data for Machine Learning/Deep Learning
- Open Access Repository/Open Science Initiative for Research Data Management
  - to collect and manage all research data (especially raw experimental data) as well as scholarly outputs.

Concluding Remarks

- Being a late adopter is sometimes advantageous as we can learn from other countries on best of breeds; eg ElectricINDIGO
- By creating a trust framework, SIFULAN can promote greater and more secure e-Science collaboration activities
- Eventually build Federated Cloud Infrastructure to allow for HPC-On-Demand in various flavours
- A long journey ahead

Trust

anonymous access!