Eduroam in Armenia: Development Milestones

**Vision**

**High-speed network**
- DIGITAL ECOSYSTEM

**Computing resources**
- Cloud computing
- HPC cluster computing
- Grid computing
- Lightweight computing

**Storage resources**
- Cold
- NAS
- Hybrid
- All-flash

**Software**
- Libraries
- Packages
- Middlewares
- Queue systems
- Ticketing systems

**Algorithms**
- Distributed & parallel
- AI and machine learning
- Data analytics

**Data processing**
- Hadoop/Spark
- MapReduce
- Archiving
Services

**01 INFRASTRUCTURE**

1. Internet and GEANT access
2. IaaS Cloud (1-64 cores per VM), cloud.asnet.am
3. AI cloud on GPUs, cloud.asnet.am
4. Container cloud, cloud.asnet.am
5. Connectivity & network management (Perfsonar, DNS, Hosting)

**02 COLLABORATIVE**

1. eduroam, eduroam.am
2. Edugain, afire.asnet.am
3. Distance learning, meet.asnet.am
4. Mail system, mail.asnet.am
5. Cloud storage, nextcloud.asnet.am
6. Music without border, Lola

**03 DOMAIN SPECIFIC**

1. Data preservation, noad.asnet.am
2. Earth Observation, datacube.sci.am
3. Repositories & mirroring, mirrors.asnet.am
4. SaaS and Jupyter notebooks
eduroam - Challenges

Lack of interest
Already used free WiFis or other infrastructures, which doesn’t
- offer WiFi secure access for students and researchers.
- offer global WiFi access to make universities more attractive

Funding
- Limited funding to deploy a sustainable infrastructure

Personal identity
- Own personnel identity database - use only for internal purposes.
- Lack of authentication systems

Technical expertise
- To develop eduroam infrastructure, radius servers or to provide additional servers for that purposes
- NREN staff training to gain new competencies by collaboration with the GEANT Consortium
eduroam – technical difficulties

All-in-one Institutional RADIUS server (IRS) implementation

- Such solution was interesting for several small organizations, so we additionally implemented all-in-one **Institutional RADIUS server (IRS)**, hosted at ASNET-AM premises solution, with multiple realms in one freeradius server.
- Such approach saved much resources, because multiple small organizations don’t need to have separate radius server. Many of them don’t want to host radius server at their premises.
- GEANT’s recently developed **eduroam Managed IdP** service solves the same task for small organizations, but it provides per-device certificate-based solution and is hosted outside our country, which is not desired solution in our case.
eduroam – technical difficulties

eduroam service location management system

- Registration of institutions participating in eduroam service in Armenia.
- Adding service locations with coordinates to be displayed on map of “eduroam.am” website.
- Generation/validation of new v.2.0 json-based data format to provide as Armenian NRO for “monitor.eduroam.org” website.
eduroam – technical difficulties (IdPs: 13, SP: 38)
eduroam service location web map solution (based on Leaflet & OpenStreetMap)
eduroam – personal identity

Identity infrastructure to boost the implementation

• For such cases we implemented the use of organization’s corporate email (IMAP) service as an identity source for eduroam authentication.

• This approach somehow boosted eduroam service use in Armenia within last years.

• Adding service locations with coordinates to be displayed on map of “eduroam.am” website.

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Yerevan State University (YSU)

One of the major universities in Armenia located in the center of the Yerevan – the capital of Armenia actively adopted it’s internal WiFi infrastructure to add “eduroam” SSID and thus provide WiFi access to eduroam community at it’s whole campus coverage territory.
eduroam usage – use cases

Armenian Genocide Museum-Institute

This scientific and cultural institution occupies an area of 2,000 square meters in Yerevan’s Tsitsernakaberd Memorial complex

ASNET-AM supported “eduroam” WiFi infrastructure development in Armenian Genocide Museum-Institute
Further developments

- Implementation of RADSEC for FLRs
- Infrastructure monitoring tools improvements
- WiFiMon Deployment
- Dissemination and marketing
- Telegram bot-based radius log data analysis and alerting systems creation
THANK YOU!