CSIT Conference 2023, Yerevan, Armenia, September 25 - 30

eduroam in Armenia - Success and Challenges

Arthur Petrosyan
Institute for Informatics and Automation Problems, NAS RA
Yerevan, Armenia
e-mail: arthur@sci.am

Gurgen Petrosyan
Institute for Informatics and Automation Problems, NAS RA
Yerevan, Armenia
e-mail: gurgen@sci.am

Robert Tadevosyan
Institute for Informatics and Automation Problems, NAS RA
Yerevan, Armenia
e-mail: robert@sci.am

***Abstract*— This paper describes the current state of eduroam service in Armenia. The identity infrastructure boost concept for eduroam service in Armenia was published in 2019. Success stories and challenges of the past several years are presented. Lessons learned are described, as well as plans for the future development are presented.**

***Keywords*— eduroam, WiFi, Wireless, Authentication, Authorization, Identity, IMAP**

I. INTRODUCTION

Four years have passed since the identity infrastructure boost concept for eduroam service in Armenia was published [1] and then gradually implemented. The concept was based on the idea of authenticating eduroam users via their organization's IMAP server.

The Network Support Team of the Academic Scientific Research Computer Network of Armenia (ASNET-AM) [2] was investigating possibilities to extend the impementation of the initial boost concept as well as to detect issues preventing its large adoption.

Among the issues rasied in the past years were the following major factors. Many universities and other educational organizations in Armenia tend to transfer their identity databases to big companies like Google or Microsoft since they provide a free ready-to-use interface, with many features, like free email accounts, several services, like online conferencing, etc. As we found out, this tendency creates several issues for smooth the usage of the IMAP-based boost concept introduced and implemented some years ago by the ASNET-AM eduroam team.

The first small issue is the relatively slow performance of the IMAP protocol compared to other authentication methods such as LDAP. This factor, in addition to the remoteness of the IMAP server, which adds a delay in the response from it in some cases, depending on the WiFi access point devices, made it difficult to connect to the eduroam service [3].
Despite successful authentication, the WiFi access point simply did not assign a network address to the smartphone or tablet using the DHCP protocol, because the response to the authentication request was late, and the device was denied access due to a timeout.

Another more difficult problem was that companies like Google and Microsoft began to phase out or severely restrict their use of the IMAP protocol [4],[5],[6], requiring at least manual enabling of it in the settings of each user. To continue using IMAP, each user had to personally enable several options in personal account settings. Such decisions not to support so-called “Basic Authentication” and requirements to use specific methods or multi-factor authentication (sometimes referred to as 2-step verification) are very welcome in terms of security, but they also limit and sometimes even make it impossible to widely use the IMAP-based method developed earlier to connect to eduroam service.

II. OVERCOMING CHALLENGES

In order to find a proper way out of the situation, our team conducted some investigations and finally succesfully impemented the option to transfer eduroam service authentication to LDAP-based identity check for those universities and other educational organizations in Armenia, which keep their identity database in outside companies like Google or Microsoft. It required some efforts to undertstand the particular configuration for each case.

In the case of Google, we found the “Google Secure LDAP environment” mechanism [7] provided by that company, which is ready-to-use for the FreeRADIUS software package [8], that can act as a client in such case to integrate with eduroam service.

Currently, we have Google-based identities working fine and we work towards Microsoft-based identities.

III. INTEGRATION WITH MULTI-EAP

Previously, we have also developed and implemented a multi-EAP Radius configuration for eduroam service [9]. This mechanism of authenticating multiple-realm eduroam users via a single multi-EAP radius configuration proved to be very practical in our case. This was based on the fact that many scientific research or educational organizations in Armenia do not have a huge number of users. And besides that, they usually don’t want or are not able to implement the RADIUS infrastructure on-premises. So, when they express interest to

join the eduroam community, our team, which operates as the National Roaming Operator (NRO) in Armenia, comes to assist them by providing a hosted RADIUS server solution as an ASNET-AM network service. From our point of view, to use the eduroam service for such small communities that do not have a huge number of users, it is cost-effective to use a single RADIUS server for many such organizations, instead of having a separate radius server for each organisation. The solution is unmatched in terms of practical open implementation.

IV. CONCLUSION AND FUTURE PLANS

The described progress in eduroam service and challenges presented in this paper give a brief overview of the current situation. The ASNET-AM eduroam team, acting as the National Roaming Operator (NRO), continues to provide support for all ASNET-AM member organisations as well as for all parties in the Armenian research and educational community that are interested in eduroam service deployment. We hope more and more organizations in Armenia will show interest in joining the eduroam worldwide community and feel the great advantages of WiFi roaming.

V. REFERENCES

[1] A. Petrosyan, G. Petrosyan, R. Tadevosyan and K. Arsalanian, "Identity Infrastructure Boost Concept for eduroam Service", Mathematical Problems of Computer Science, *Transactions of IIAP NAS RA*, Yerevan, Armenia, vol. 52, pp. 61-65, 2019 Available: http://mpcs.sci.am/index.php/mpcs/article/view/35

[2] The Academic Scientific Research Computer Network of Armenia (ASNET-AM) [Online]. Available: http://www.asnet.am

[3] eduroam service in Armenia [Online]. Available:https://www.eduroam.am/

[4] End of support for Basic Authentication access to Exchange Online API's for Office 365 customers [Online]. Available: https://devblogs.microsoft.com/microsoft365dev/end-of-support-for-basic-authentication-access-to-exchange-online-apis-for-office-365-customers/

[5] Deprecation of Basic authentication in Exchange. [Online]. Available: https://learn.microsoft.com/en-us/exchange/clients-and-mobile-in-exchange-online/deprecation-of-basic-authentication-exchange-online

[6] Less secure apps & your Google Account [Online]. Available: https://support.google.com/accounts/answer/6010255?hl=en&visit_id=637874313904642190-2825291659&p=less-secure-apps&rd=1

[7] Secure LDAP: Connect LDAP-based apps and services [Online]. Available: https://support.google.com/a/topic/9048334?hl=en&ref_topic=7556686&sjid=13185872960075537066-EU

[8] FreeRADIUS [Online]. Available: https://freeradius.org/

[9] A. Petrosyan, G. Petrosyan, R. Tadevosyan and K. Arsalanian "Development of multi-EAP Radius Configuration for eduroam Service", Mathematical Problems of Computer Science, *Transactions of IIAP NAS RA*, Yerevan, Armenia, vol. 53, pp. 63-66, 2020 Available: http://mpcs.sci.am/index.php/mpcs/article/view/24