Making eduroam available on city wireless networks

Tertiary Education & Research Network of South Africa, July 2019

In October 2018, TENET partnered with the City of Cape Town with a view to making the eduroam wireless roaming service available to staff and students of higher educational institutions over the CoCT's existing wireless infrastructure. The intent was to make access to information more readily available in public spaces, and particularly in libraries and hospitals. In Cape Town this primarily benefits CPUT, UCT and UWC students; in other cities it would primarily benefit the universities with a campus in that city.

This document explains what eduroam is, and provides background on the partnership with cities.

What is eduroam?

eduroam (education roaming) is a secure, world-wide roaming access service developed by the international research and education community. It allows students, researchers and staff from participating institutions to obtain wireless access and Internet connectivity at participating service providers simply, securely, and free-of-charge.

eduroam was launched in South Africa in 2012 and it is now utilised by over 30 universities and research institutions across the country. There are more than 800,000 higher education students in South Africa who can make use of eduroam, and this number is set to grow as we start introducing eduroam into TVET colleges. Roaming is available in over a hundred countries worldwide, a growing number of which are in Africa.

Benefits of implementing eduroam on city wireless networks

Benefits to students

The national White Paper for Post-School Education and Training[1] recognises that access to ICTs is now "an indispensable infrastructural component for effective education provision"*(§7.4)* with many critical learning materials only available online. Deploying eduroam on city wireless infrastructure significantly increases its footprint, allowing more students to be reached closer to their homes. This appreciably improves the experience of university students – particularly those living in poorer communities, many of whom must travel considerable distances to their places of learning. By bringing eduroam closer to them, we realise the dual benefit of improving their productivity (and their ultimate goal of obtaining a qualification and becoming a productive citizen) and reducing the burdens of high data costs and transport.

In addition, should South Africa see a resurgence of the disruptions we've seen over the last few years, increased eduroam coverage extends the options available to those students who wish to continue with their studies.

Benefits to the city

Deploying eduroam is strongly aligned with the strategic focus areas of many cities. It shows that the city is responsive to the plight of students and is taking active steps to ensure that those students from under-privileged backgrounds have equal opportunities. By allowing students to access study materials closer to their homes, providing eduroam helps decrease the number of journeys students need make to university campuses whilst simultaneously reducing the burden of high cellular data costs.

Experience in both university and city libraries[2] suggests that the availability of eduroam not only has direct benefit to students using these places as study spaces, but also indirect benefit in the form of "feet through the door" and the resulting increased utilisation of other library services. This strengthens the role of public libraries in democratising access to information, creating opportunities to participate as active digital citizens. Likewise, making access to information more easily available to health care students in city hospitals may have knock-on benefits for the patients they serve.

Making eduroam available at public access points helps showcase the city as a world-class destination to international students and academics visiting the city, and break the impression that Africa is somehow "behind". The deployment of

[1] Department of Higher Education & Training, October 2013. ISBN: 978-1-77018-713-9
[2] "extending eduroam into South African townships", TNC15 (Porto, Portugal), June 2015. https://tnc15.terena.org/getfile/2338

eduroam in the City of Cape Town attracted international attention within the research and education sector, and visitors who discover eduroam in unexpected locations often laud these discoveries on social media[3].

This means there are significant direct and indirect public relations opportunities available to cities to showcase themselves as both leading the way and caring for their community.

It also allows the city to leverage additional benefit from their existing investment in wireless infrastructure and fibre optics, helping demonstrate those investments offer returns that are of tangible benefit to the residents of the city.

Case studies[4] are available showcasing similar partnerships with municipalities in other parts of the world. South Africa was the first country in Africa to deploy eduroam on a city-wide basis and, whilst the City of Cape Town partnership is still in its infancy, we're excited by the results we're seeing there.

Technical implications

eduroam is a standards-based WPA2-Enterprise WiFi network coupled with some clever RADIUS routing. Implementing it on a city's existing wireless infrastructure merely requires some additional configuration[5], and should not involve any additional infrastructure costs.

Typically, eduroam is implemented with the owner of the wireless hotspots carrying the Internet traffic and this is how it is implemented in both universities and commercial establishments. However, in the case of cities there are potentially other mutually agreeable arrangements that can be considered after discussion with the city's network and IT staff (allowing us to gain a better understanding of the city's infrastructure).

Cost implications

TENET's partnership with the City of Cape Town was facilitated under an existing high-level cooperation agreement between the CoCT, the Cape Higher Education Consortium, and three local universities. It is a strategic relationship that furthers the aims of that existing agreement, and is not commercial in nature: no money exchanges hands in either direction. We envision similar strategic partnerships with other cities, either facilitated under existing cooperation agreements with local institutions or via agreements made directly with TENET on behalf of its beneficiary institutions.

By definition, access to eduroam is always free to the end user.

Relationship to commercial hotspot providers

eduroam serves a closed user community and does not try to compete with commercial providers.

eduroam typically provides limited Internet access, often with significant restrictions on ports and protocols. It is not intended to replace commercial providers; instead it is meant to provide secure, easy access to those services that are most widely used by staff and students (primarily web browsing and email). It usually provides users with VPN access back to their home institution, over which they can access licensed resources and whatever other access their institution may offer.

About TENET

TENET is the Tertiary Education and Research Network of South Africa NPC, a non-profit company with members established by South African public universities. It is one of the operating partners in the South African national research and education network (the other being the SANReN Competency Area of the CSIR). Based in Cape Town, TENET is recognised by SARS as a public-benefit organisation, and holds both an ECS and ECNS license from ICASA[6].

TENET contacts

eduroam operations:
Guy Halse
guy@tenet.ac.za / (021) 763 7156

network operations:
Len Lotz
len@tenet.ac.za / (021) 763 7161

[3] See, for example, https://twitter.com/search?q=%23love2eduroam
[4] "eduroam beyond the campus", GÉANT, May 2016. https://www.eduroam.org/wp-content/uploads/2016/05/eduroam-service-case-study.pdf
[5] For the technically minded, deploying eduroam needs an additional SSID to be configured; EAP authentication requests be routed to the eduroam national RADIUS servers; and that we come to some agreement about how the client network traffic is handled. See https://eduroam.ac.za/faq/join/#sp
[6] Company registration 2000/020780/08; NPO registration 014-801 NPO; PBO registration 930006055; Licenses 0130/IECNS/MAR/09, 0130/IECS/MAR/09