eduroam: Collaborative Internet Access

EIFL Webinar – Wednesday, 14 November 2012

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Promotional video

Joined early? Visit http://youtu.be/TVCMcMZS3uA
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About me...

- Brook Schofield
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Australian living in The Netherlands
Grew up on the island state of Tasmania

Attended the EIFL GA in Belarus 2011
What is eduroam?

• eduroam is a global wireless roaming network, based on:
  – WPA2 & 802.1X (network access control)
  – RADIUS (infrastructure to transport credentials)
  – Trust fabric (RADIUS hierarchy and policy)
  – No web splash screen portal or shared passwords

• Started in the TERENA Task Force “Mobility”

• eduroam = education roaming
Subject: [mobility] proposal for inter NREN roaming
From: Klaas Wierenga <Klaas.Wierenga@surfnet.nl>
Date: Thu, 30 May 2002 12:46:43 +0200
To: mobility@terena.nl

Dear all,

As promised at the mobility workshop a proposal for an inter-NREN wireless LAN roaming test. Based on some investigation we have done in the Netherlands we propose to experiment with the 802.1x standard as that seems the most likely candidate for inter-NREN roaming since it gets a lot of industry attention and scales relatively easy.

I'm looking forward to hear your comments or better ideas.

Cheers,

Klaas
Two (2) options explored ...and rejected

- **Open WiFi + VPN**
  - Route traffic back to your home organisation via VPN
    - Benefit that “internet” traffic was from the home institution
  - Access Control is problematic
    - You don’t really know who is using it (just that they have a VPN)

- **Web Redirect**
  - Popular at airports, cafés and hotels
  - No “over the air” security
What is wrong with this page?

- Airport Portal Pop-up
  - Who runs it?
  - Can you trust it?
  - What do they need (vs want) to know about you?

- Is this run by a 16 year old on her laptop?
The solution: eduroam

- Trust based on national policy
- Security based on 802.1X/RADIUS
- VLAN assignment to separate users
FCCN
RADIUS Proxy servers
connecting to a European
level RADIUS proxy server

University of Southampton

FCCN

SURFnet

(DFN)

FUNET

- Participation guidelines are being drafted
- Aim is to increase membership. Spain, Norway, Slovenia, Czech Republic & Greece have indicated their willingness to join.

February 2004
Where is eduroam?
Continual growth...

• **58 territories**
  - 43 territories in Europe
  - 8 territories in Asia (7 pilots in progress)
  - 2 territories in North America
  - 3 territories in Africa (1 pilot planned)
  - 2 territories in Latin America (7 pilots planned)

• **5000 locations, >1000 institutions**

• **WigleNet Crowd Sourced Access Point Stats**
  - May 2012 #27 – 0.108% - 70561
  - Sept 2012 #23 – 0.116% - 88135
  - Nov 2012 #22 – 0.112% - 97127
  - 3rd in list of operators behind BT & SFR
Growth requires Governance

• Global eduroam Governance Committee
  – Created in 2011 to provide a “voice” for all regions

• World-wide representation
  – Europe (3), Asia (2), North America (2), Latin America (2), Africa (2)
  – Created the “Compliance Statement”

• Signatories
  – Europe (1), Asia (8), North America (2), Latin America (2), Africa (3)
eduroam Benefits

• Builds on your existing campus wifi
  – Not new equipment – just new configuration

• Use eduroam @ home
  – Only 1 campus wifi network for all!

• No guest accounts
  – Helpdesk + identity verification is expensive

• Improved support services in development
  – Global improvements benefit your campus
• I need to know who accesses my network
  – Causes Loss of Control

• Evil People Use eduroam
  – You can still monitor usage and block individuals

• Country X doesn’t have eduroam
  – 58 countries now – 7 more in Latin America thanks to ELCIRA in 18 months time

• My staff and students don’t go anywhere
  – You’ll be surprised what your students get up to!
eduroam in the future...

• Ready for Hotspot 2.0, Next Generation Hotspot (NGH) and Wi-Fi Passpoint™
  – Ready since 2003!
  – Support a wider range of roaming partners
  – Nothing is simpler than doing nothing!

• Mobile/Cellular industry adopting this approach

  — [Quote]

  Ulf-Göran Nilsson @ugnilsson
  eduroam + The Cloud = great success! 600,000 students and researchers in Sweden go mobile with eduroam and The Cloud
  bit.ly/SAvA0s
eduroam Companion

[Images of the eduroam Companion application showing search results for Edinburgh and a location map with tagged sites.]
eduroam Companion

- Also on Android
- Additional features
  - Heat maps
  - Twitter/Facebook
Why a configuration assistant tool?

- Solve the user confusion problem
  - Institutional flexibility causes a documentation problem... ...installation is the hardest part.

  UoB Library @uoblibrary
  iOS 6 devices unable to connect to UoB wifi after upgrade. Try using eduroam with un: regno@beds.ac.uk and normal pw.
  tinyurl.com/bvep9wb

  @Jurasikk
  has anyone even figured out #UI eduroam on mac’s yet? I am still lost and confused....

  @christfornow
  Could anybody @CiCS tell me what CA certificate I need to specify when connecting to the eduroam WiFi network on a BlackBerry?
  #Confused!
Why a configuration assistant tool?

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<th>MD5 hash</th>
<th>Salted MD5 hash</th>
<th>SHA1 hash</th>
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Why a configuration assistant tool?

• **Institution choose Authentication Type**
  – PEAP-MSCHAPv2 popular for Microsoft Platforms
  – TTLS-PAP popular for sites with encrypted LDAP
  – TTLS-* is only supported in Wi-Fi Passpoint

• **Multiple Device Platforms**
  – MacOS X and iOS devices (iPod, iPhone, iPad)
  – Microsoft Windows
  – Android Phone and Tablets
  – Other laptops/phones/tablets less popular (but need support) and new devices appear…
eduroam Pilots & Future Deployments

• **Pilots**
  – Latin America: Argentina, Chile, Costa Rica, Venezuela
  – Asia: India, Malaysia, Mongolia, Pakistan, Philippines, Singapore, Sri Lanka
  – Africa: Tanzania

• **Interest**
  – Latin America: Colombia, El Salvador, Ecuador
  – Africa: Sudan, Cameroon, Zambia, Zimbabwe
Collaborations with EIFL

• Zimbabwe
  – NUST are interested

• Zambia
  – ZAMREN collaborating with Radboud Universiteit

• Mongolia
  – Using Koha as an authentication source

• Sudan
  – SudREN initial setup started
How do I join eduroam?

• Set up a RADIUS server at your campus that...
  – Authenticates your own users
    • FreeRADIUS [http://freeradius.org/](http://freeradius.org/)
  – Adds WPA2-Enterprise to your wireless network
  – Proxies guest users’ requests to your roaming operator (and on to international infrastructure)

• Connect to your federation RADIUS server managed by your Roaming Operator

• Promote eduroam to your users
What if I don’t have a Roaming Operator?

- I don’t have an NREN
  - A university or library can be the Roaming Operator
  - USA, Hong Kong, Macau all started with an institution
  - eduroam is a service above the network
  - Underlying network can be an NREN, ADSL, Satellite or Cellular

- Setup a Federation Level RADIUS for your ccTLD
  - RADIUS Proxy Server
    - RadSecProxy is ideal [http://software.uninett.no/radsecproxy/](http://software.uninett.no/radsecproxy/)
  - Connect to eduroam Top-Level RADIUS

- Promote eduroam to your peers
• WiFi Access Points, a RADIUS Server and a user database for sites.
• RADIUS proxy for Federation Level RADIUS