SURFnet

eduroam

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- Policy
- Status of eduroam
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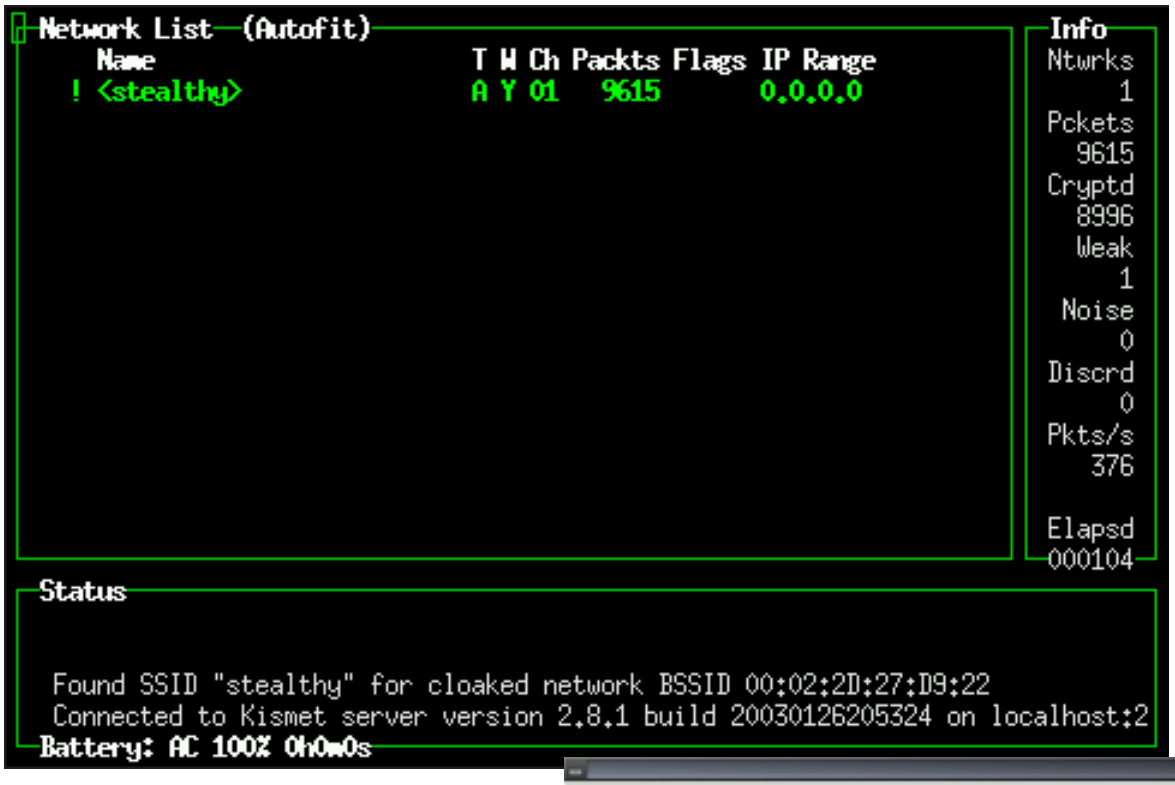
From 802.1X to

eduroam

Wireless LANs are unsafe



root@ibook:~# tcpdump -n -i eth1

19:52:08.995104 10.0.1.2 > 10.0.1.1: icmp: echo request

19:52:08.996412 10.0.1.1 > 10.0.1.2: icmp: echo reply

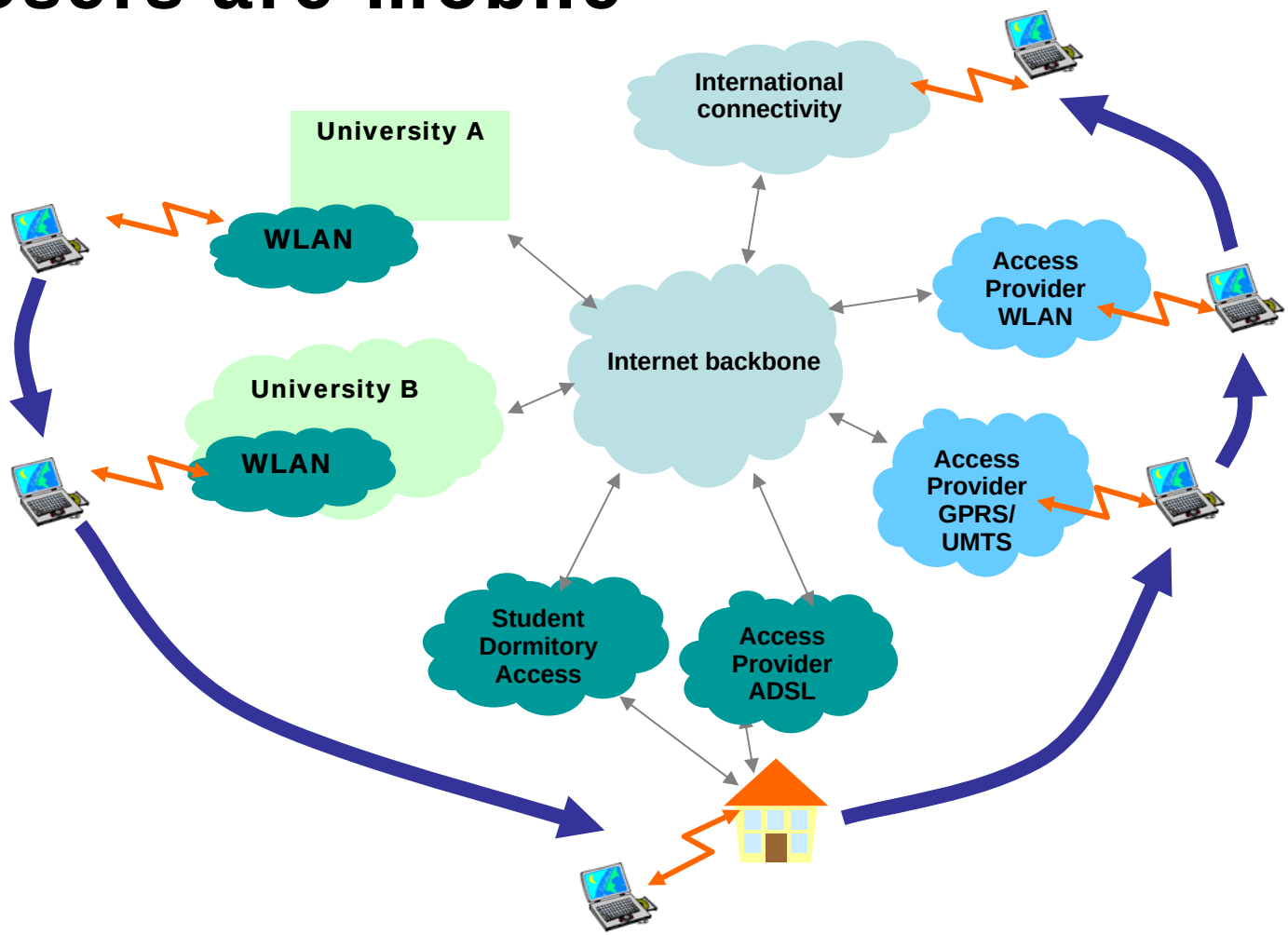
19:52:08.997961 10.0.1.2 > 10.0.1.1: icmp: echo request

19:52:08.999220 10.0.1.1 > 10.0.1.2: icmp: echo reply

19:52:09.000581 10.0.1.2 > 10.0.1.1: icmp: echo request

19:52:09.003162 10.0.1.1 > 10.0.1.2: icmp: echo reply ^C

Users are mobile



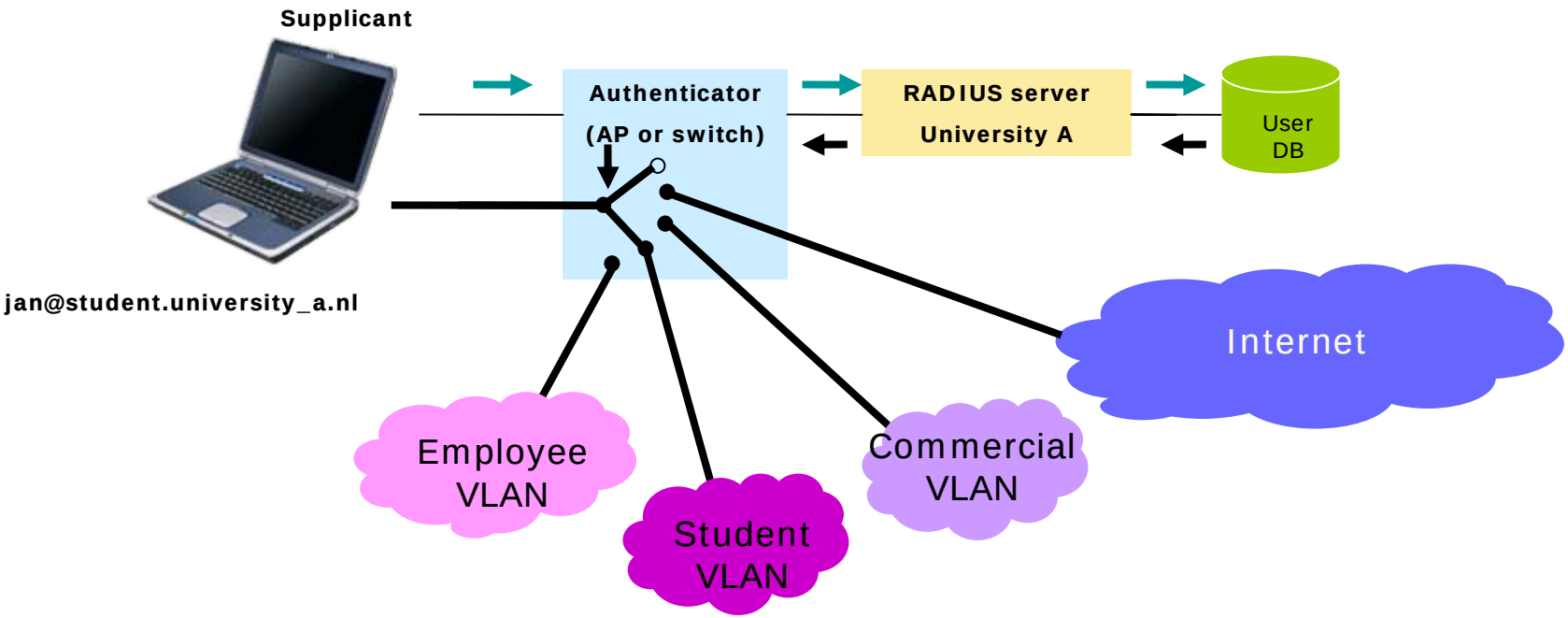
Requirements

- Identify users uniquely at the edge of the network
  - No session hijacking
- Enable guest usage
- Scalable
  - Local user administration and authentication
- Easy to install and use
  - At the most one-time installation by the user
- Open

eduroam architecture

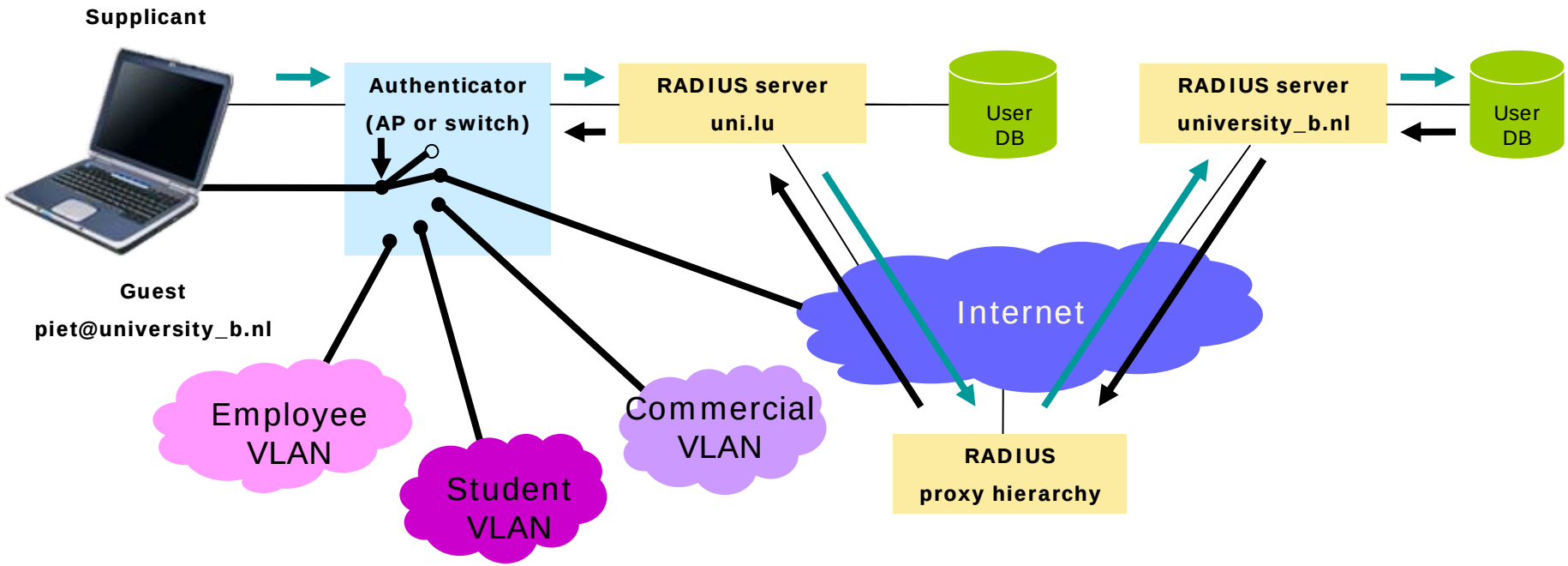
- Security based on 802.1X
  - Protection of credentials
  - Provides basis for new wireless security standards WPA and 802.11i
  - Different authentication mechanisms possible by using EAP (Extensible Authentication prototcol)
    - Username/password
    - X.509 certificates
    - SIM-cards
  - Integration with VLAN assignment
- Roaming based on RADIUS proxying
  - Remote Authentication Dial In User Service
  - Transport-protocol for authentication information
- Trust fabric based on:
  - Technical: RADIUS hierarchy
  - Policy: Documents/contracts that define the responsibilities of user, institution, NREN and the eduroam federation

Secure access to the network with 802.1X



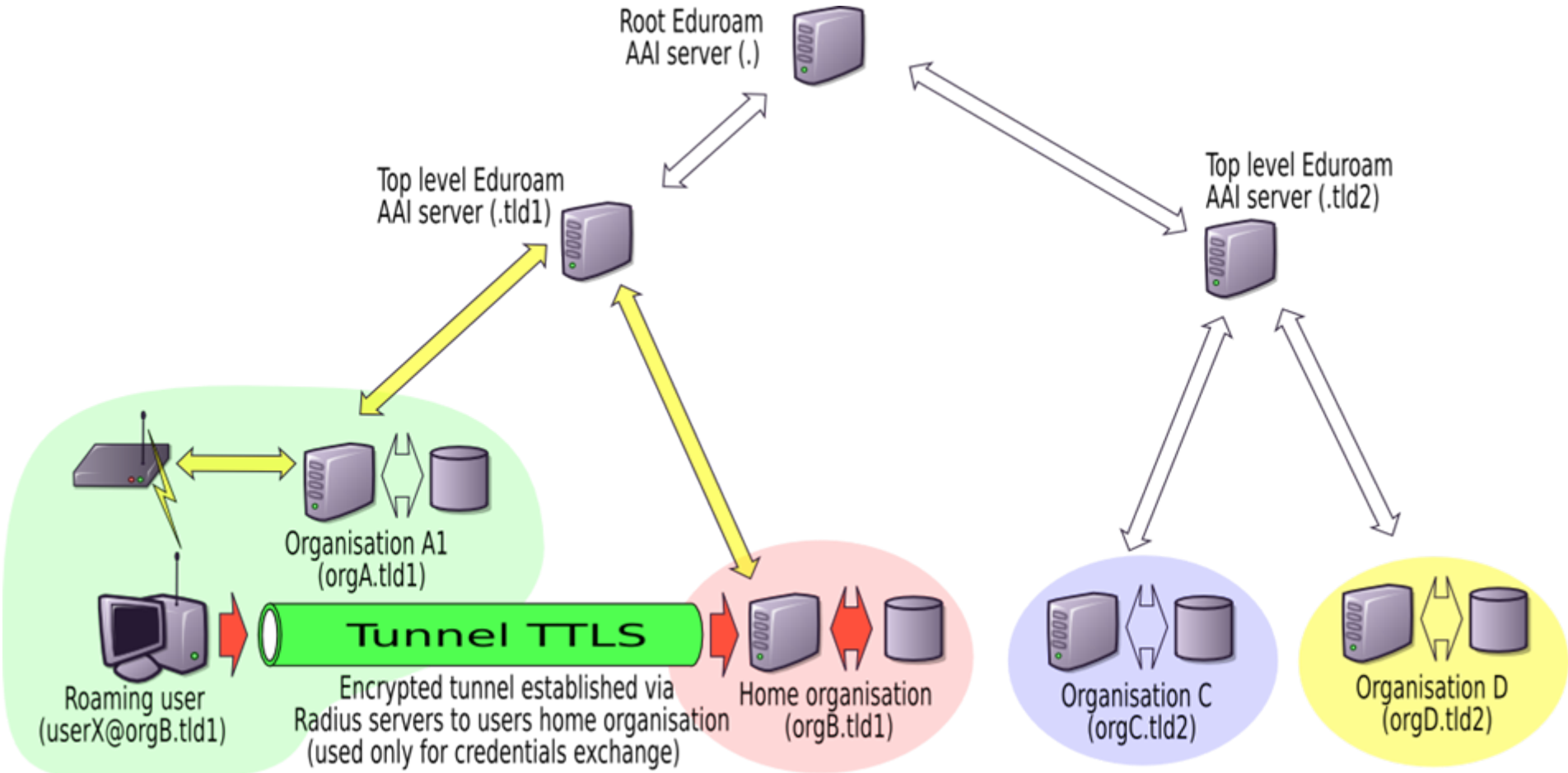
- 802.1X
- (VLAN assigment)

eduroam



- Trust based on RADIUS plus policy documents
- 802.1X
- (VLAN assigment)

The RADIUS proxy hierarchy



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The eduroam policy

High-quality Internet for higher education and research

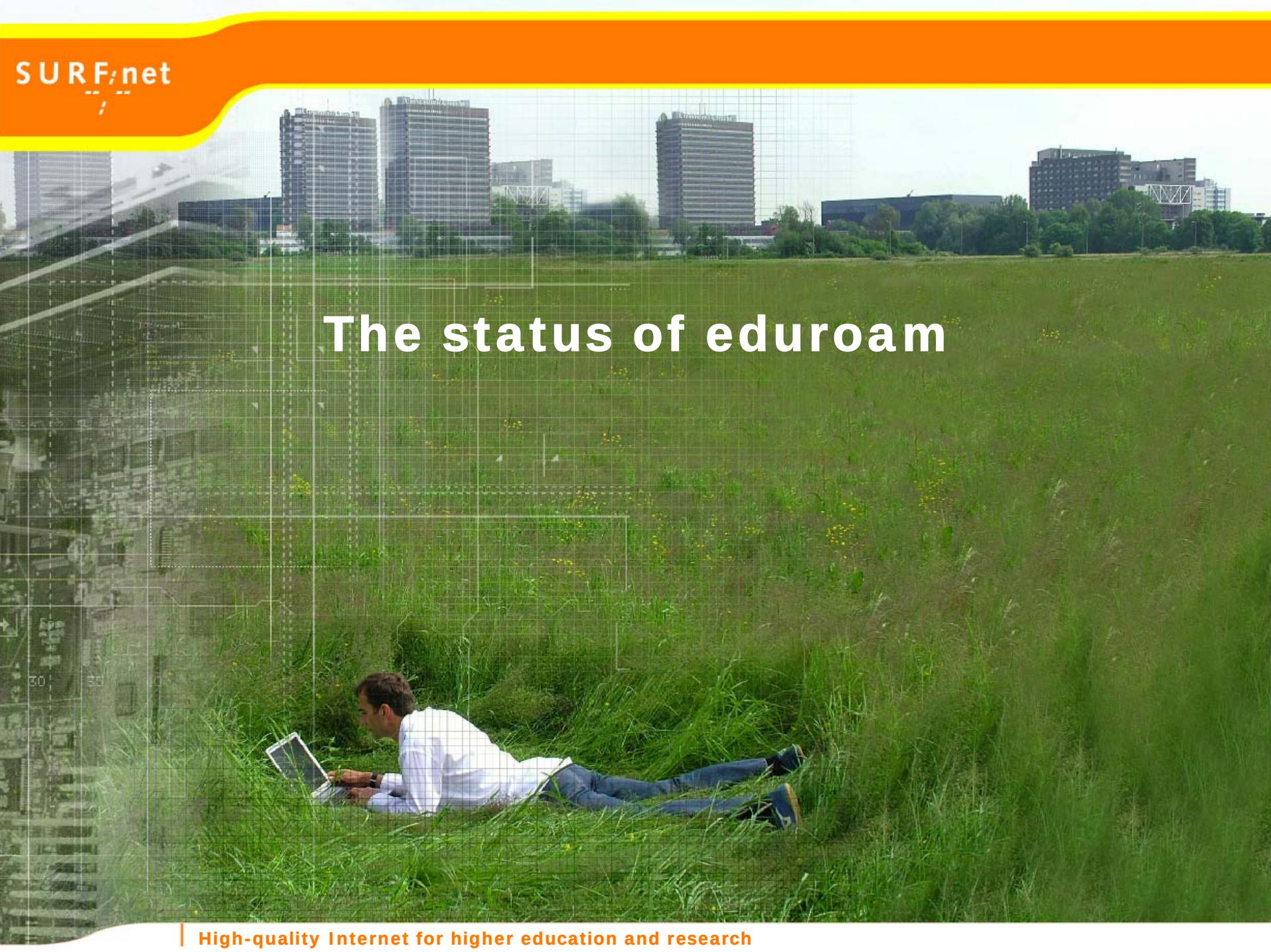
The European eduroam policy

- Mutual access
- Home institutions are/remain responsible for their users abroad
- Members are NRENs
- Members guarantee required security levels by their participants
- Members promote eduroam in their countries
- European eduroam may peer with other regions

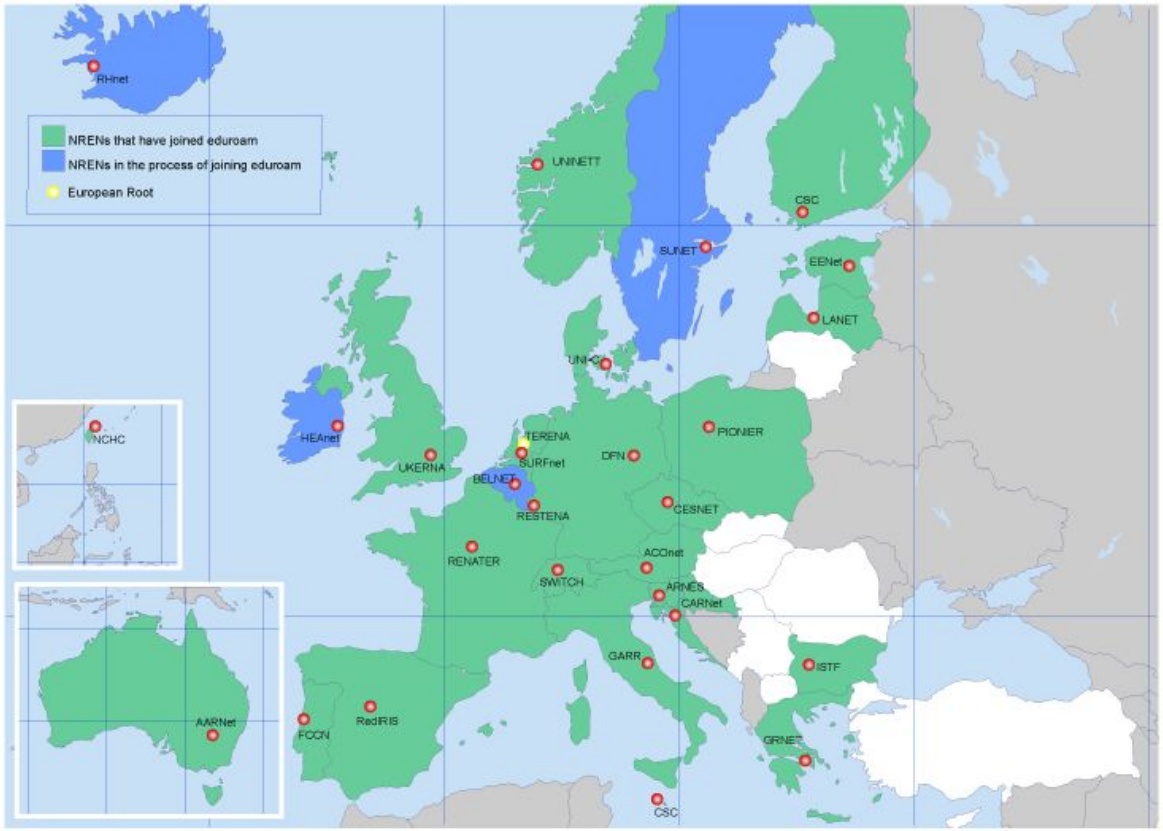
National policy

- Mutual access
- Members are connected institutions
- Home institution is/remains responsible for its users behaviour.
- Home institution is responsible for proper user management
- Home and visited institution must keep sufficient logdata
- Appropriate security levels

The status of eduroam



Status of *eduroam*



New members:

- Lithuania
- **Romania**
- Hungary
- China
- Hong Kong

- Over 500 institutions in Europe, Australia and Taiwan
- USA, Japan, Korea will follow shortly

eduroam

- Provides global network roaming
- Strong technical foundation:
  - RADIUS
  - 802.1X
  - Lingua Franca: EAP
- Needs ubiquity

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Joining eduroam

Joining eduroam for an NREN

- Set up a server that proxies that:
  - Accept requests for *.cc-tld and forward to the right institution
  - Accept requests for non *.cc-tld and forward it to the European servers

- Send an (encrypted) e-mail to join@eduroam.org with:
  - FQDN of toplevel RADIUS-server(s)
  - IP-addresses of toplevel RADIUS-servers
  - Shared secret to use between European servers and national server(s).
  - URL of national eduroam website
  - Information about test-account
  - Contact details admin

- Sign the policy agreement

Joining eduroam for an institution

- Set-up your local 802.1X infrastructure
  - Accept requests for your-domain.cc-tld and process them
  - Proxy requests for non-local users to the national server

- Send an (encrypted) e-mail to your NREN with:
  - FQDN of toplevel RADIUS-server(s)
  - IP-addresses of toplevel RADIUS-servers
  - Shared secret to use between your and their server(s).
  - URL of your eduroam website
  - Information about test-account
  - Contact details admin

- Sign the policy document


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Conclusions
High-quality Internet for higher education and research

Conclusions

- 802.1X provides secure, scalable access to the campus network
- Enabling eduroam is a easy once 802.1X is in place

- Many have already joined, so

Join….

More information

- eduroam in SURFnet
  - http://www.eduroam.nl
- eduroam in Europe
  - http://www.eduroam.org
- TERENA TF-Mobility
  - http://www.terena.nl/mobility
- The unofficial IEEE802.11 security page
  - http://www.drizzle.com/~aboba/IEEE