

Connecting beyond eduroam

wouldn't it be nice if...

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Workshop
_2025

Jisc

Basics - eduroam

The policy bit – the rules

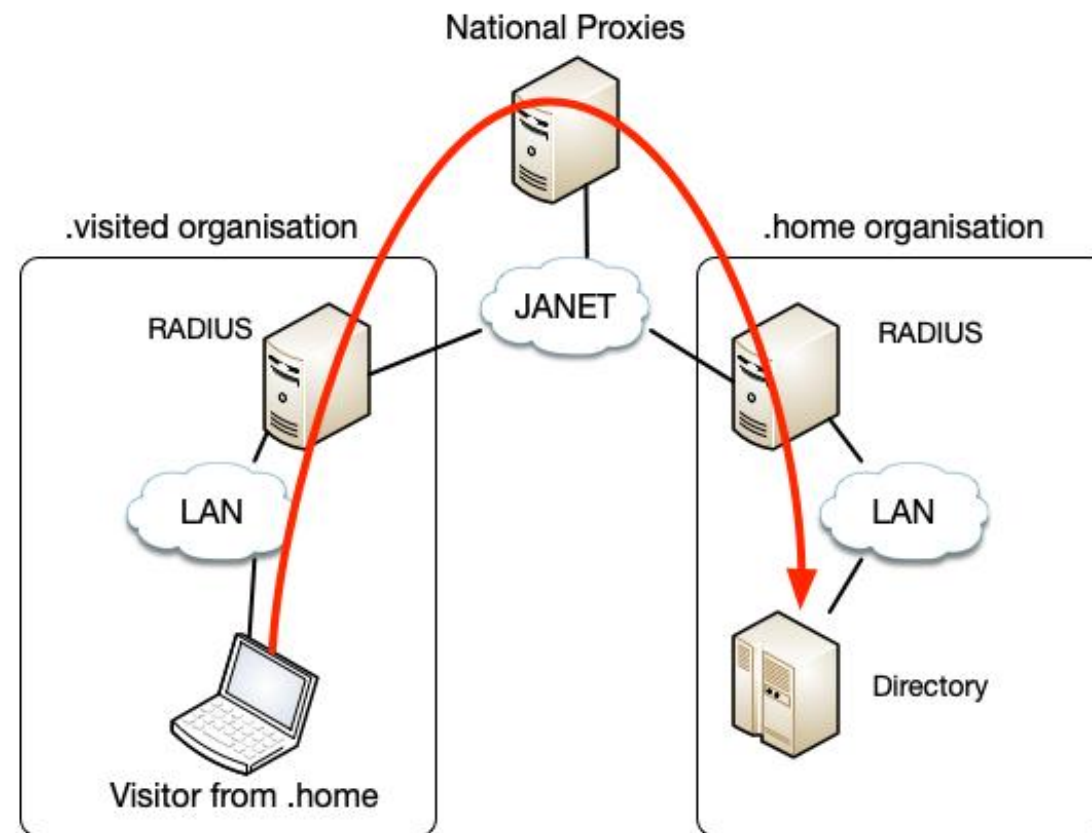
- (Mostly) Wi-Fi network for education and research only
 - Students, researchers, people who work in research + education
- There's only one level here: Free at best effort
 - We give you free internet when you visit because you give us the same when we visit you
- Terms & Conditions are the JANET T&Cs
 - Do no evil, don't cause trouble, your home organisation can turn your access off!



Basics - eduroam

The technical bit – how things work

- You provide an 'eduroam' network
- You connect it to eduroam(UK) - Jisc
- Others do the same thing
- Hey presto – you can roam between each others' networks
- Everyone trusts that the others also behave
- Internationally the same, just scaled up



Basics - eduroam

The technical bit – how things work

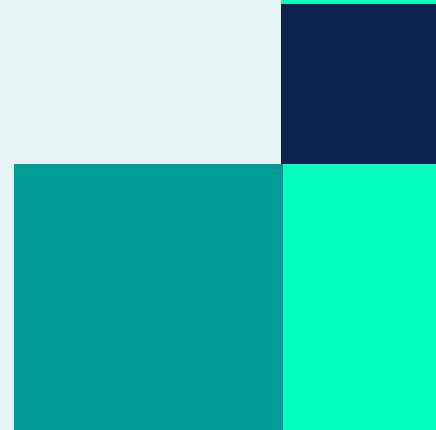
- Is SSID-based
 - ***MUST*** have a name called 'eduroam' (all-lowercase, **nothing else**)
- Everyone trusts eduroam UK
 - Trust is “guaranteed” by Jisc
- Works on any phone with WPA2 or WPA3 **Enterprise** support.
 - Not PSK, not Open, ***only*** Enterprise
 - Why? PSK has zero security
 - WPA Enterprise is secure between the access point and the device (uses encryption)





But there's another
world out there...

what if...



What if...

What if...

- You could take your eduroam connected phone and roam onto a hotel Wi-Fi network?
- Or a restaurant somewhere? Or a bar? Or at the airport? Or your cruise ship? Or in-flight Wi-Fi?
- No more silly captive portal asking your details!
- No more 'Login with Google/Facebook',
- No more fake 'Bob The Builder, 10 Downing Street, London, WC1A'



Enter OpenRoaming!

Huh?

- Started in late 2010s
- Handed to Wireless Broadband Alliance (WBA) in 2020
 - Jisc is a member of the WBA, as is eduroam
- Uses many of the same principles as eduroam
- Networking is similar (but different)
- Internationally standardised



OpenRoaming

The policy bit – the rules

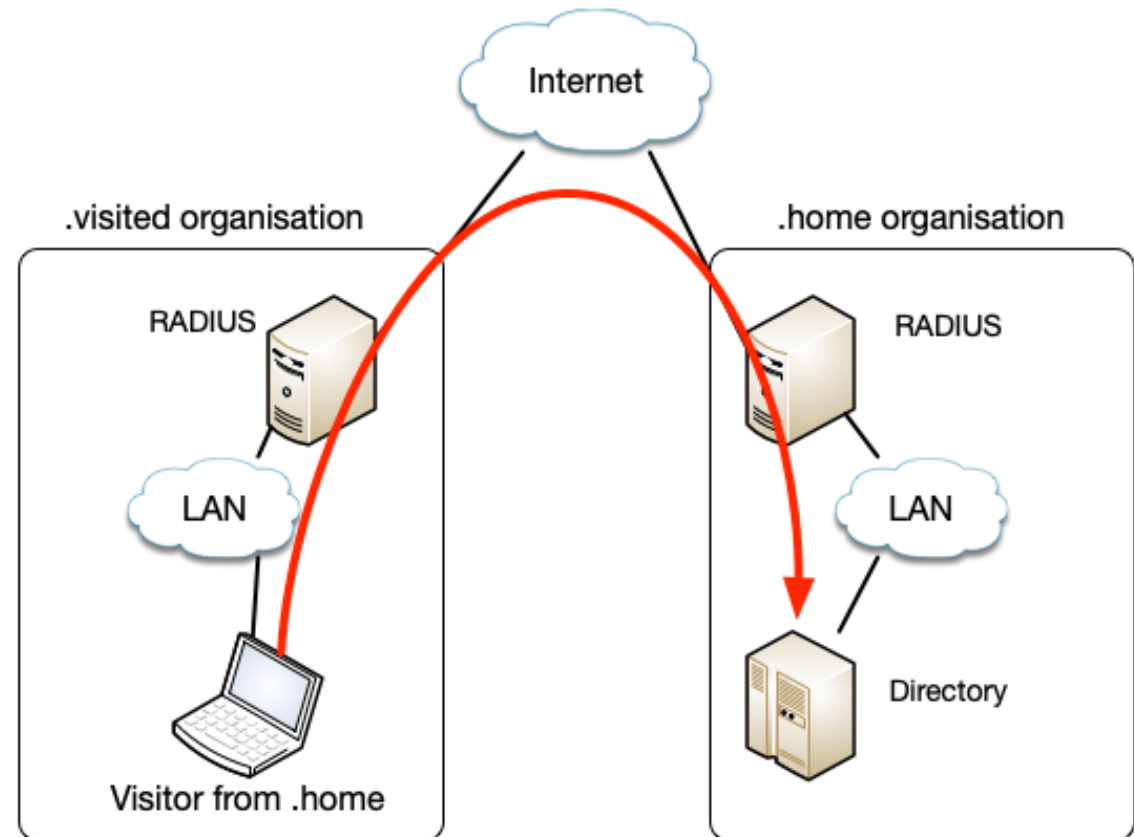
- For anyone
 - Hotels, education, local authorities, shopping centres, any recognised identity
- Multiple policy levels
 - Settlement-Free Internet: Free! This is the one we care about!
 - Settled Internet: Charged for
 - With or without privacy:
 - We only want the one with privacy!
- Standard set of Terms & Conditions (like eduroam)
 - Do no evil, don't cause trouble, like eduroam, your home organisation can turn your access off!



OpenRoaming

The technical bit – how things work

- You provide a Passpoint network
- No top-level proxy bit
- You can connect directly to others
- Others provide/do the same
- Hey presto – you can roam between each others' networks
- Everyone trusts that the others also behave



OpenRoaming

The technical bit – how things work

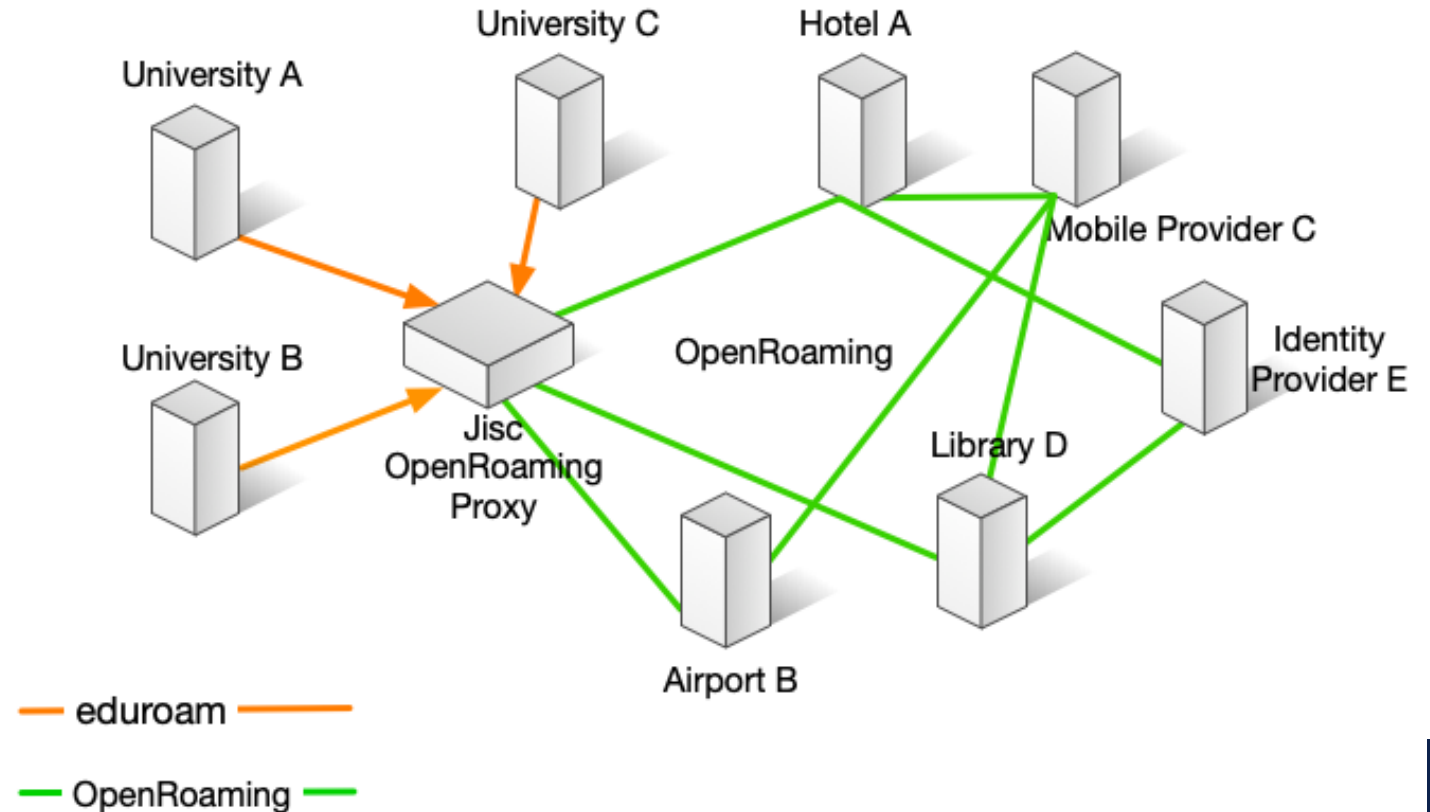
- Is Passpoint-based
 - SSID can be called anything! The ANQP beacon tells devices who can connect with RCOI values
 - RCOI = Roaming Consortium Organisation Identifier: type of organisation allowed
- Everyone in the OpenRoaming universe trusts the WBA
 - Trust is “guaranteed” by WBA with certificates
- Works on any phone with WPA2 or WPA3 **Enterprise** support ***and*** Passpoint
 - Like with eduroam, WPA2 Enterprise encrypts traffic between access point and device



Ok, whatever – How does this matter to us?

Connecting you to OpenRoaming!

- Jisc runs an OpenRoaming proxy
 - Provides access to OpenRoaming for existing eduroam members
 - Makes your university an IDP on OpenRoaming
 - Saves you costs (certificate)
 - You don't need to do much



That's nice – What do I need to do?

Your organisation as a home organisation (IDP) on OpenRoaming:

- Decide if your students/staff should be able to roam to OpenRoaming
 - likely a management decision
- NAPTR record (very important!)
- RADIUS server
 - We use your existing eduroam servers to send requests to you
- eduroam CAT profile configured for OpenRoaming
- OpenRoaming proxy
 - That's us!



That's nice – What do I need to do?

Should we? Shouldn't we?

- Check the OpenRoaming Terms and Conditions:
 - <https://wballiance.com/openroaming/toc/>
- Check security posture/risks
 - Remember, this is just like:
 - eduroam or govroam (but without Jisc)
 - Starbucks, Costa Wi-Fi, Airport Wi-Fi, ...
 - Educate your staff and students (use VPN if you offer it)
- Advantages/Disadvantages?
- Data Protection Impact Assessments etc



That's nice – What do I need to do?

NAPTR record

- This tells other OpenRoaming organisations where to find your home server (that's us!)
- Which DNS supports NAPTR:
 - Janet PDNS, BIND, Amazon Route 53, Azure DNS, others
 - Check with your DNS software/service vendor
- Check out the eduroam.uk NAPTR record: **dig +short NAPTR eduroam.uk**
- Insert this (replace **your-realm.ac.uk** with your own) into your DNS:

Type	Order	Preference	Flags	Services	Regexp	Replacement	Name	Class	TTL
NAPTR	100	10	s	aaa+auth:radius.tls.tcp		_radsec._tcp.openroaming.eduroam.uk	your-realm.ac.uk	IN	3600

That's nice – What do I need to do?

eduroam CAT profile

- Enable OpenRoaming in the eduroam CAT profile in the “Media Properties” of your profile
- Choose “OpenRoaming” or “Additional Consortium OIs” properties
 - Use values “004096”, “5a03ba0000”, “5a03ba08000”
 - eduroam (“001bc50460”) always included
- geteduroam installs OpenRoaming if OpenRoaming “Always” is selected 🙌 🙌 🙌

• **Support: E-Mail**

is already defined IdP-wide. If you set it here on profile level, this setting will override the IdP

[Add new option](#)

Media Properties for this profile

Additional HS20 Consortium OI	004096	-
Additional HS20 Consortium OI	5a03ba0000	-
Additional HS20 Consortium OI	5a03ba0800	-
Additional HS20 Consortium OI	5a03ba1000	-
Additional HS20 Consortium OI	5a03ba1800	-
Additional HS20 Consortium OI	5a03ba2000	-
Additional HS20 Consortium OI	5a03ba2800	-
OpenRoaming	Always	-

[Add new option](#)

[Save data](#) [Discard changes](#)

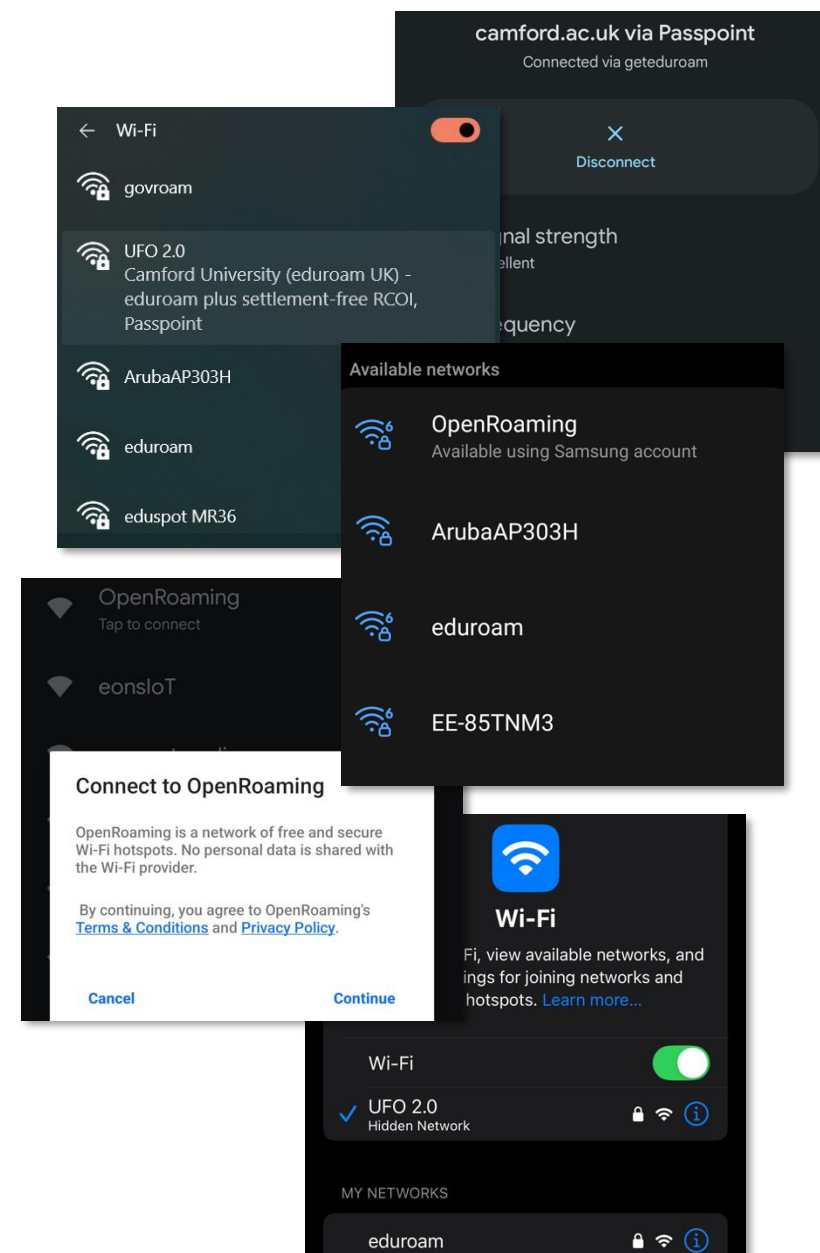
eduroam CAT
Release [CAT-2.1.3](#)

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That's nice – What supports it?

User devices:

- Google Pixels, some Samsung phones, built into the Wi-Fi section.
 - Shows 'OpenRoaming, available using...' or 'Tap to Connect'
- iPhones, other Android phones
 - Use an app like geteduroam, shows 'your-realm via Passpoint'
- Windows 10 + 11
 - Profile XML files with a secret sauce command-line to import profile
- Linux laptops: Use wpa_supplicant config
- macOS: Use .mobileconfig file



That's nice – What supports it?

Network equipment:

- All major vendors support it
 - <https://wballiance.com/join-us/current-members/> - Your vendor is likely in this list
- Check settings for Passpoint, ANQP
- Cisco has OR connection directly through Cisco Spaces



Does OpenRoaming also work the other way?

Your organisation as a visited organisation (ANP) on OpenRoaming:

- OpenRoaming also has visited sites:
 - Access Network Providers: Hotels, libraries, metropolitan networks etc
 - Guest networks (similar to The Cloud, BT OpenZone etc)
- Requirements are similar to IDPs
- eduroam UK (Jisc) can help
 - Point your Passpoint network to our proxy – contact us!
 - One caveat:
 - JANET T&Cs forbid Internet traffic for guest users over JANET.
 - Auth traffic , browsing traffic 
 - Third-party connection (broadband/fibre) needed

Does OpenRoaming also work the other way?

UK Examples:

- Loughborough University has used OpenRoaming as a guest network for 5+ years:
 - Locations: Throughout Loughborough, London campus in Olympic Park
- Harlaxton College, Lincolnshire
 - Isolated location, so ideal testing ground
 - US students with AT&T mobiles or Google identities automatically roam onto free Wi-Fi
- Westminster City Council, London
 - Free access to their library Wi-Fi with eduroam credentials, Westminster's own Connected London identity.
- Co-Op Arena, Manchester
 - Free Internet access in the arena with eduroam credentials or other identities

OpenRoaming world map



Resources

- ✈ <https://community.jisc.ac.uk/library/network-and-technology-service-docs/what-openroaming>
- ✈ <https://community.jisc.ac.uk/library/network-and-technology-service-docs/openroaming-requirements-checklist>
- ✈ <https://wballiance.com/openroaming/toc/>
- ✈ <https://wballiance.com/openroamingmaps/index2.html?lat=52.3268848&long=0.9783565&zoom=6>



Thank you

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