



## Public sector roaming: govroam anyone?

Mark O'Leary

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-

# Introducing eduroam

## » A Fabric of Trust

- › It's a cooperation agreement, not a technology.

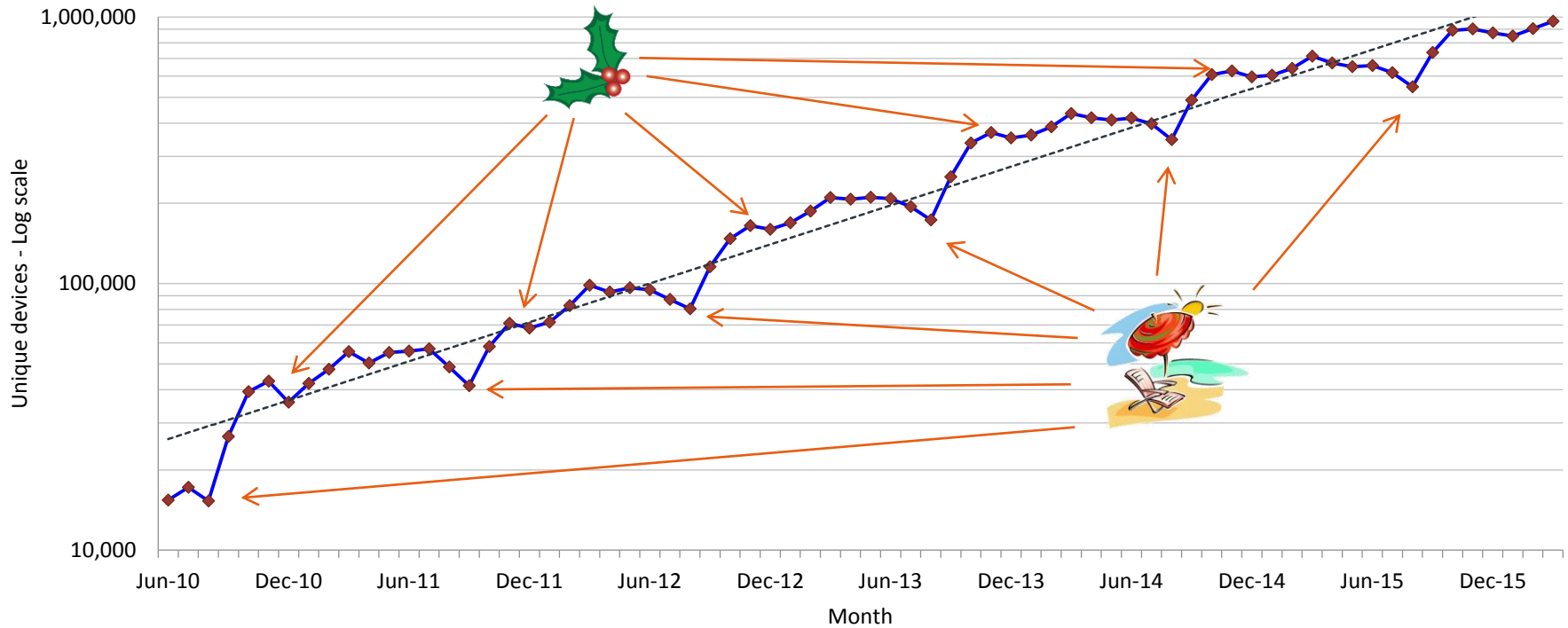
## » Fundamental principles:

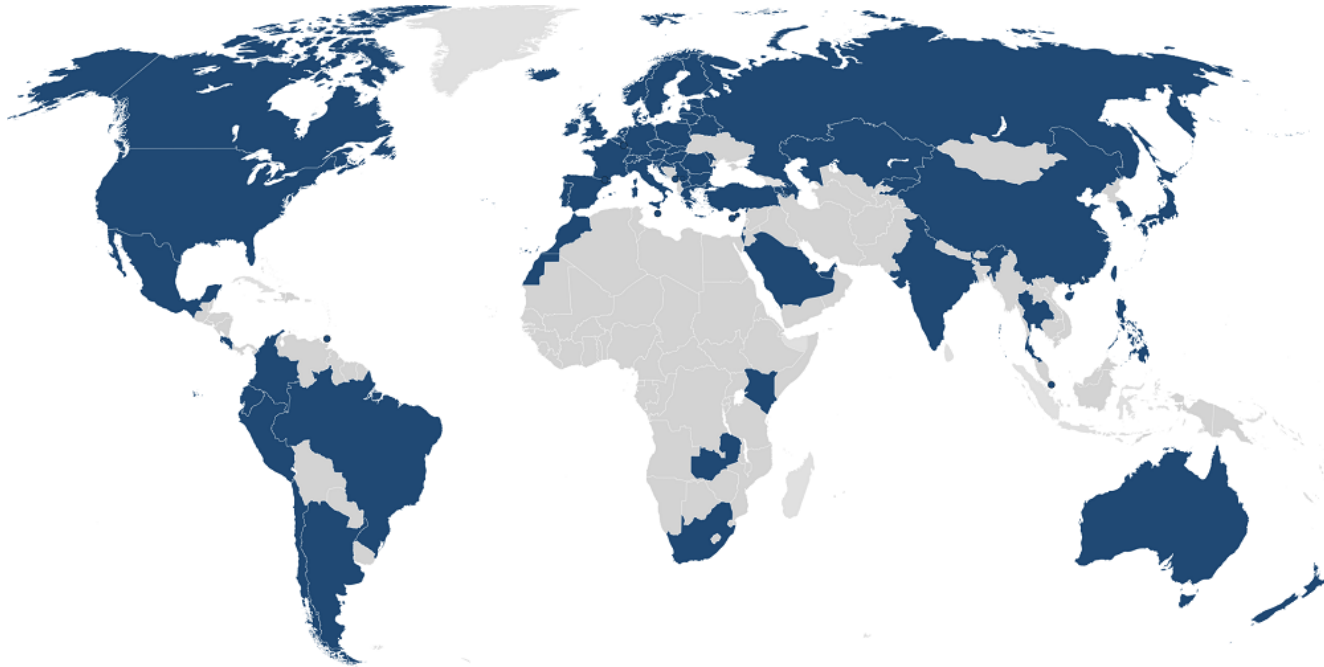
- › universal access;
- › common standards;
- › mutual cooperation to resolve issues;
- › predictable user services.

- » Approaching **1M** unique devices per month;
- » **~90M** successful authentications per month;
  
- » In March 2016, supported:
  - › **5.5 million** “roaming days”;
  - › **15,000 device-years** of roaming access
  - › Equivalent via £20pm ‘unlimited data’ SIMs is **£3.6M!**



### Unique Client Devices - Monthly Count June 2010 - March 2016





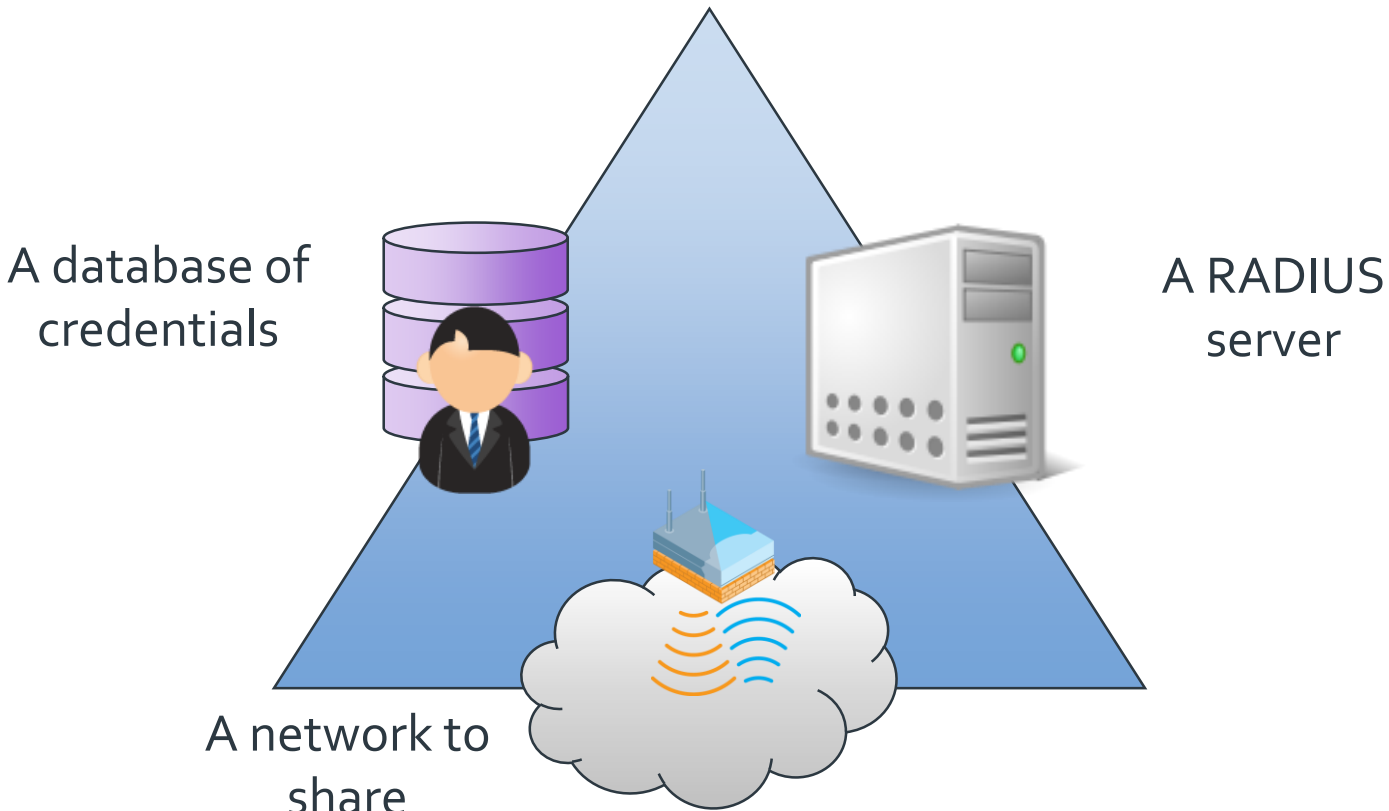
- » One billion authentications
- » 74 territories
- » 3<sup>rd</sup> most commonly encountered SSID

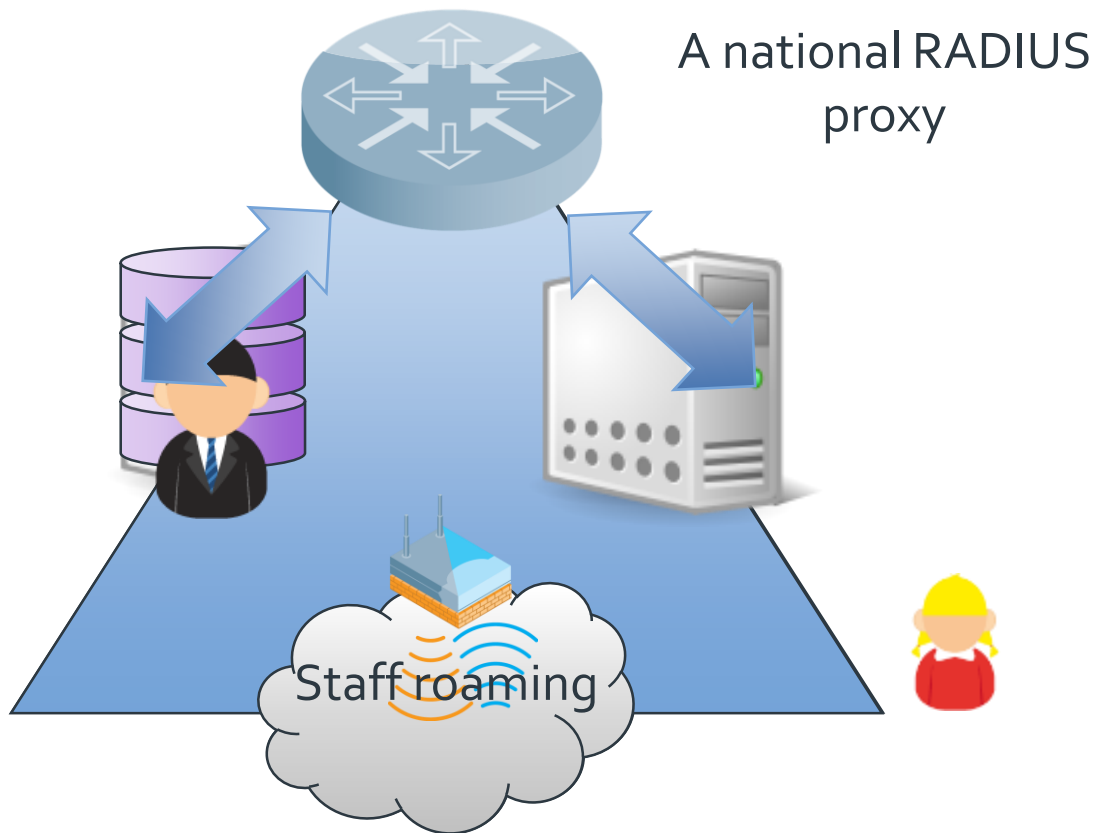
1.	Aberdeen Royal Infirmary	41.	Kingsway Care Centre, Dundee	82.	Southern General Hospital, Glasgow
2.	Aberfeldy Community Hospital, Perthshire	42.	Lambeth Hospital, London	83.	Southmead Hospital
3.	Abingdon Community Hospital, Oxon	43.	Leeds Community Healthcare NHS Trust sites	84.	St Bartholomew's Hospital
4.	Arbroath Infirmary	44.	Leeds General Infirmary	85.	St Cadoc's Hospital, Caerleon
5.	Barry Community Hospital	45.	Leicester General Hospital	86.	St Charles' Hospital, London
6.	Bethlem Royal Hospital, Beckenham	46.	Leicester Royal Infirmary	87.	St David's Hospital, Cardiff
7.	Bicester Community Hospital, Oxon	47.	Little Cairnie Hospital, Arbroath	88.	St George's Hospital, London
8.	Blairgowrie Community Hospital, Perthshire	48.	Manchester Royal Eye Hospital	89.	St James University Hospital, Leeds
9.	Bradford Royal Hospital	49.	Manchester Royal Infirmary	90.	St John's Hospital, Livingstone
10.	Bradford District Care NHS Foundation Trust sites	50.	Mansion House Unit, Glasgow	91.	St Luke's Hospital, Bradford
11.	Brechin Infirmary	51.	Maudsley Hospital, London	92.	St Margaret's Hospital, Auchterarder
12.	Bristol Eye Hospital	52.	Montrose Royal Infirmary	93.	St Mary's Hospital, Manchester
13.	Bristol Royal Hospital for Children	53.	Mount Gould Hospital, Plymouth	94.	St Mary's Hospital, Paddington
14.	Bristol Royal Infirmary	54.	Morrison Hospital, Swansea	95.	St Michael's Hospital, Bristol
15.	Calderdale Royal Hospital	55.	Murray Royal Hospital, Perth	96.	St Thomas' Hospital
16.	Cardiff Royal Infirmary West Wing	56.	Neath Port Talbot Hospital, Port Talbot	97.	Stobhill Hospital, Glasgow
17.	Chapel Allerton Hospital, Leeds	57.	Nevill Hall Hospital, Abergavenny	98.	Stracathro Hospital, Brechin
18.	Charing Cross Hospital	58.	Ninewells Hospital, Dundee	99.	Strathmartine Hospital, Dundee
19.	Charles Clifford Dental Hospital, Sheffield	59.	Norfolk and Norwich University Hospital	100.	Thame Community Hospital, Oxon
20.	Chelsea and Westminster Hospital	60.	Northern General Hospital, Sheffield	101.	The Royal London Hospital
21.	Churchill Hospital, Oxford	61.	Perth Royal Infirmary	102.	University Dental Hospital, Cardiff
22.	Creiff Community Hospital, Perthshire	62.	Pinderfields Hospital, Wakefield	103.	University Hospital Llandough, Penarth
23.	Derriford Hospital, Plymouth	63.	Pontefract Hospital	104.	University Hospital of North Staffordshire, Stoke-on-Trent (teaching block only)
24.	Dewsbury and District Hospital	64.	Pitlochry Community Hospital	105.	University Hospital of Wales campus, Cardiff
25.	Didcot Community Hospital	65.	Princess of Wales Hospital, Bridgend	106.	University of Bristol Dental Hospital
26.	Dr Gray's Hospital, Elgin	66.	Queen Charlotte's Hospital, London	107.	Velindre Cancer Centre, Cardiff
27.	Dundee Dental Hospital	67.	Raigmore Hospital, Inverness	108.	Victoria Hospital, Kirkaldy
28.	Gartnavel General Hospital & Beatson West of Scotland Cancer Centre, Glasgow	68.	Rookwood Hospital, Llandaff, Cardiff	109.	Victoria Infirmary, Glasgow
29.	Gartnavel Royal Hospital, Glasgow	69.	Royal Cornwall Hospital	110.	Wallingford Community Hospital, Oxon
30.	Glasgow Dental Hospital	70.	Royal Gwent Hospital, Newport	111.	Wantage Community Hospital, Oxon
31.	Glasgow Royal Infirmary	71.	Royal Hallamshire Hospital, Sheffield	112.	Warneford Hospital, Oxon
32.	Glenfield Hospital, Leicester	72.	Royal Hospital for Sick Children, Edinburgh	113.	Western Eye Hospital, London
33.	Great Western Hospital, Swindon	73.	Royal Hospital for Sick Children, Glasgow	114.	Western General, Edinburgh
34.	Guy's Hospital	74.	Royal Infirmary of Edinburgh	115.	Western Infirmary General, Glasgow
35.	Hammersmith Hospital	75.	Royal London Hospital	116.	Weston Park Hospital, Sheffield
36.	Harrogate District Hospital	76.	Royal Manchester Children's Hospital	117.	Whitchurch Hospital, Cardiff
37.	Horton General Hospital, Oxon	77.	Royal Sussex County Hospital	118.	Witney Community Hospital, Oxon
38.	Huddersfield Royal Infirmary	78.	Royal Victoria Hospital, Dundee	119.	Wykeham Park Day Hospital, Oxon
39.	John Radcliffe Hospital, Oxford	79.	Scunthorpe General Hospital	120.	Wythenshawe Hospital, South Manchester
40.	King's College Hospital	80.	Sheffield Children's Hospital (library only)	121.	Weston General Hospital, Somerset
		81.	Singleton Hospital, Swansea		



- » Reuse existing WLAN assets;
- » 'Zero touch' user-friendly experience;
- » Real-time "member in good standing" check (backed by home organisation assistance);
- » Reduce the need for customer-facing visitor support;
- » Reduce the need for temporary account processes, reducing attack surface;
- » Reduce costs associated with SIM-based data provision for roaming staff;
- » Increased off-site connectivity and hot-desking opportunities;
- » Reduce the overheads of meetings, conferences and events;
- » Exert real-time control over staff use of off-site connectivity;
- » Staff use connectivity implemented to industry best practices.

# The Design Pattern

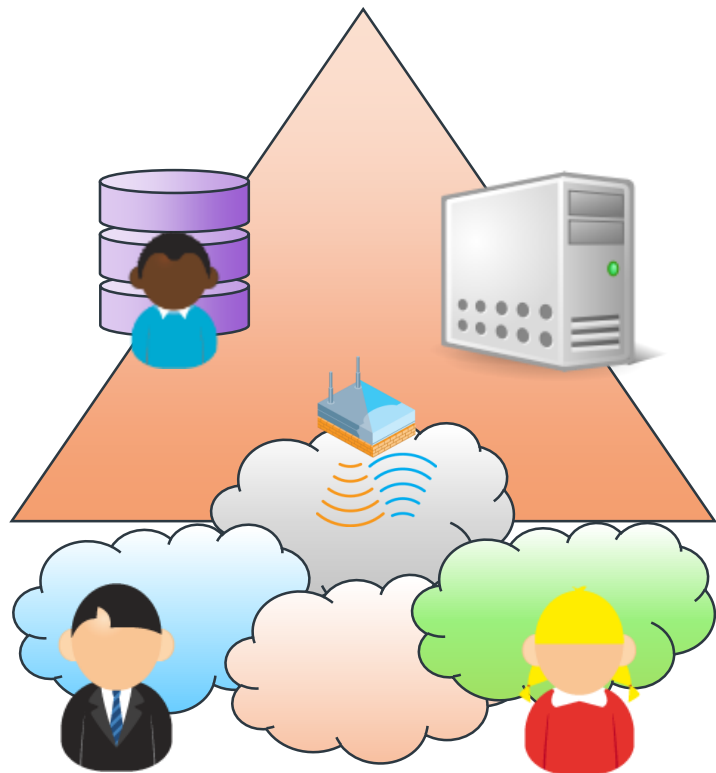


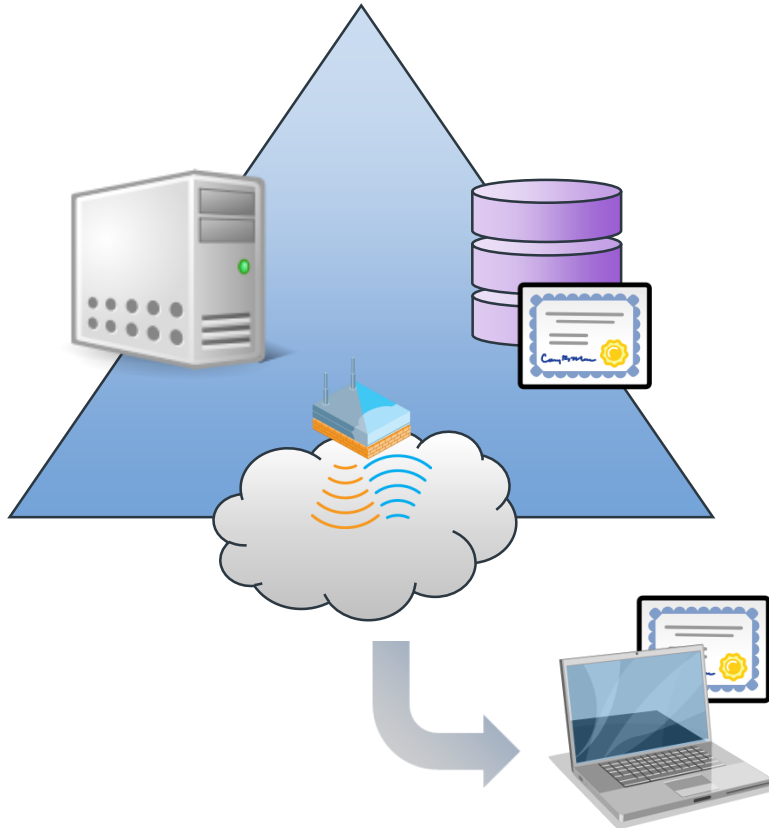


# Variations on a theme

Place visitors into different **privileged networking contexts** by user attribute.

**Example:** A hospital might allow visiting medical staff access to sensitive patient data whilst limiting non-health visitors to basic internet provision.



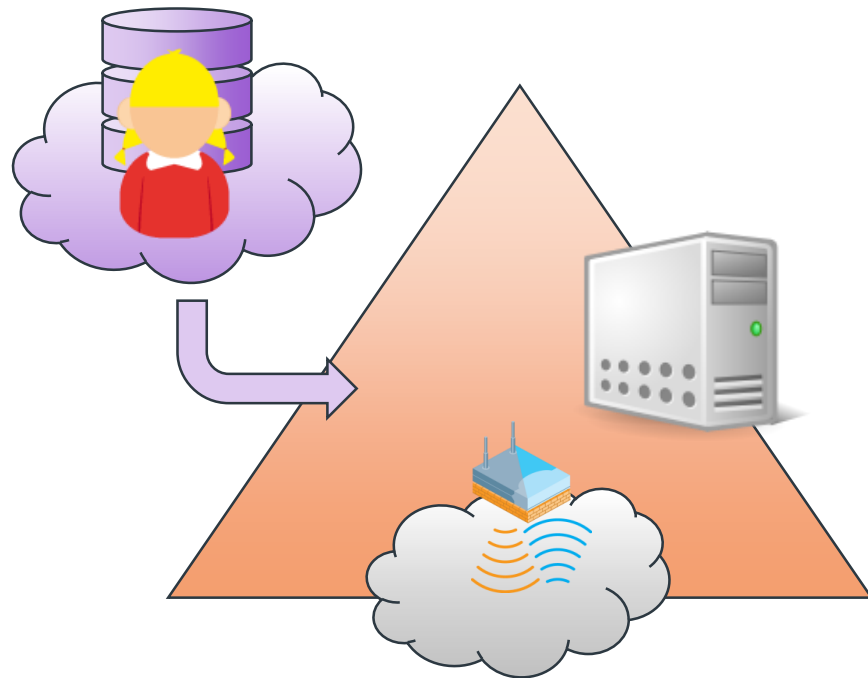


Replace user credentials with **device certificates**.

**Example:** A government department that issues secure hardware to all roaming staff might assign a certificate to each device to facilitate roaming.

## Use a **third-party identity provider.**

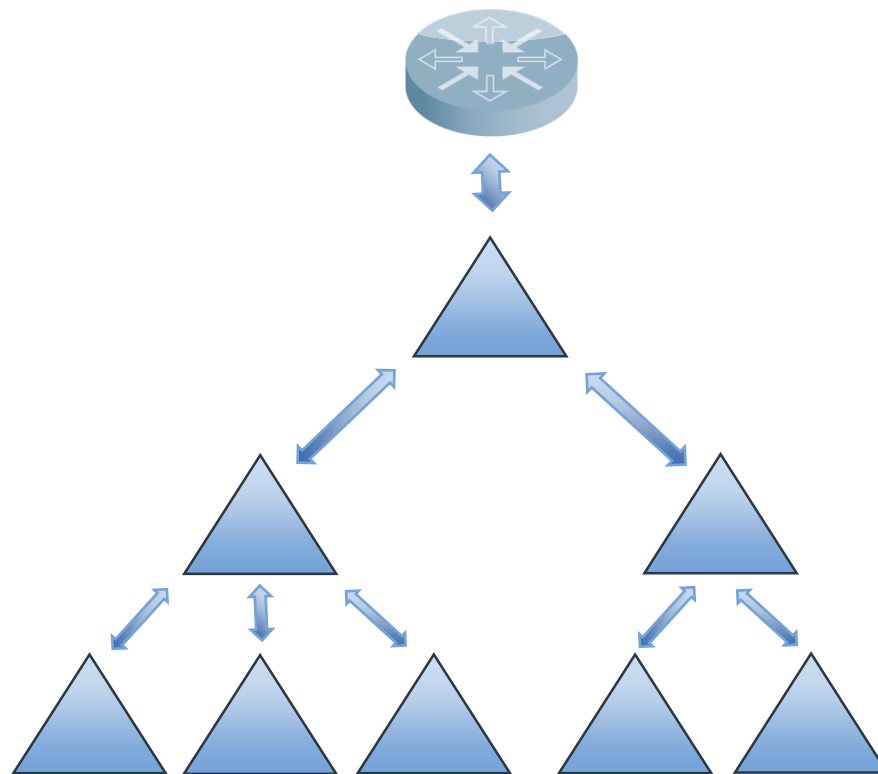
**Example:** Rather than develop a single sign-on regime with existing credentials, a participant could develop dedicated roaming credentials, or re-use existing low-value ones such as social media accounts.

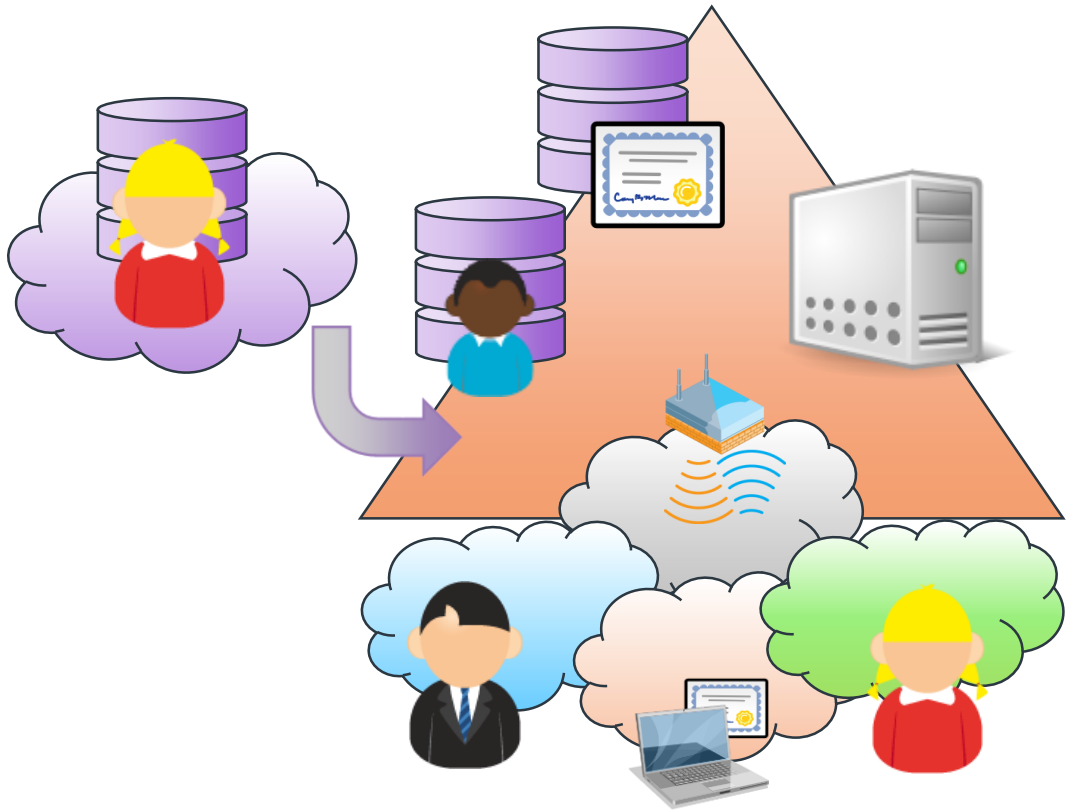




## Deploy multiple tiers of **RADIUS** aggregation.

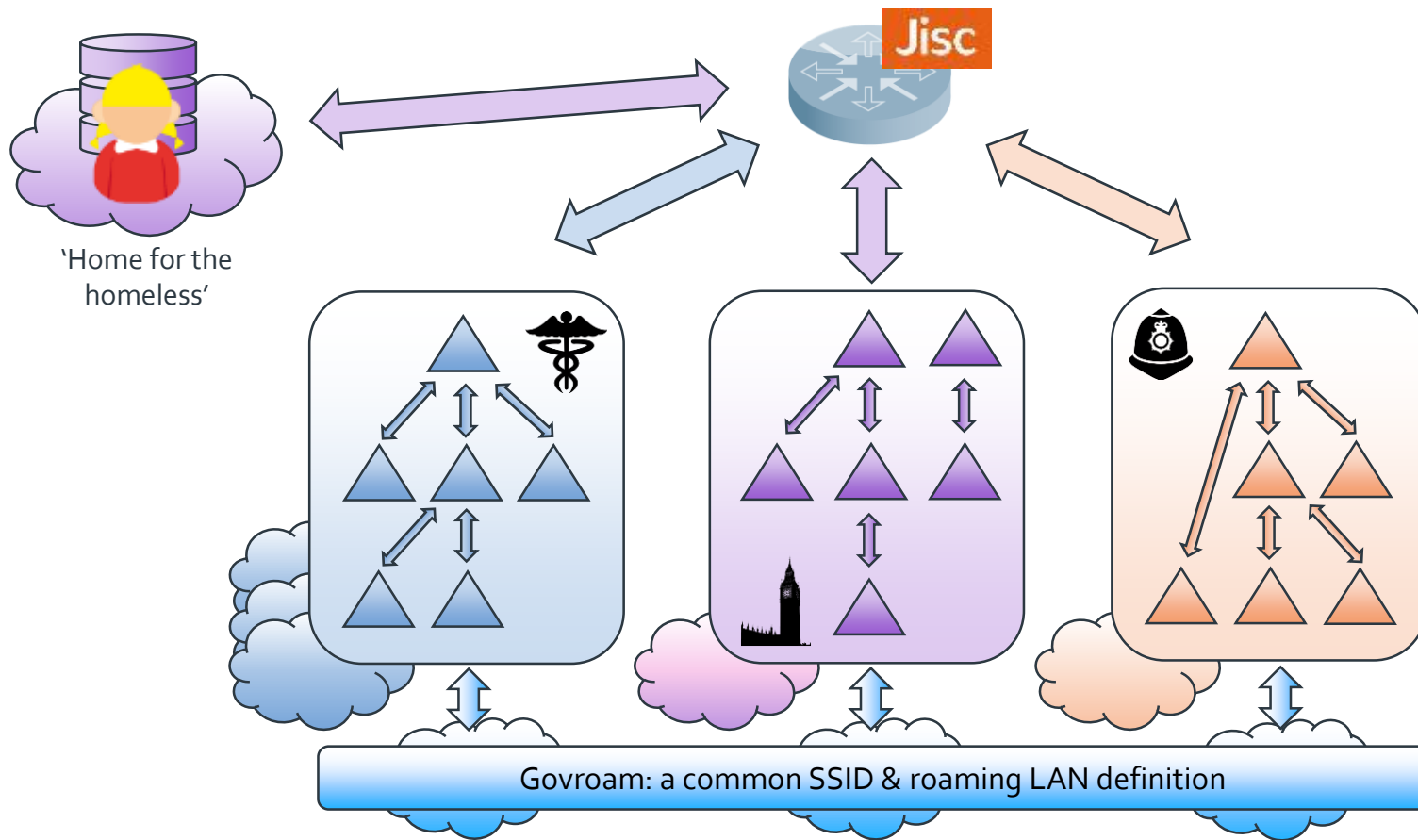
**Example:** Participant groups that expect the majority of roaming to be bounded within their own domain might design a RADIUS infrastructure that retains roaming authentication traffic in their own control as a **regional federation**.

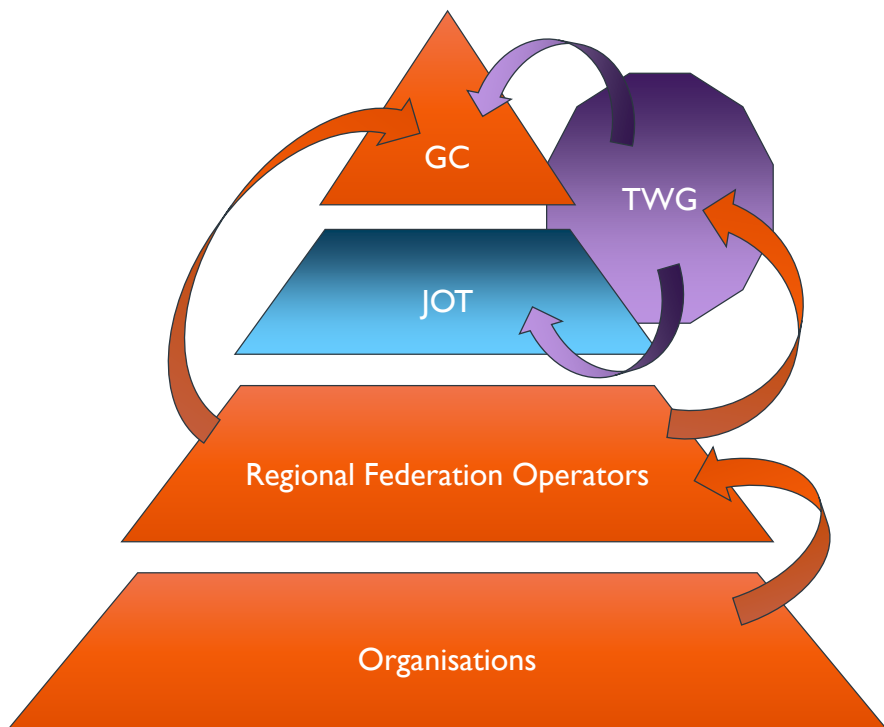




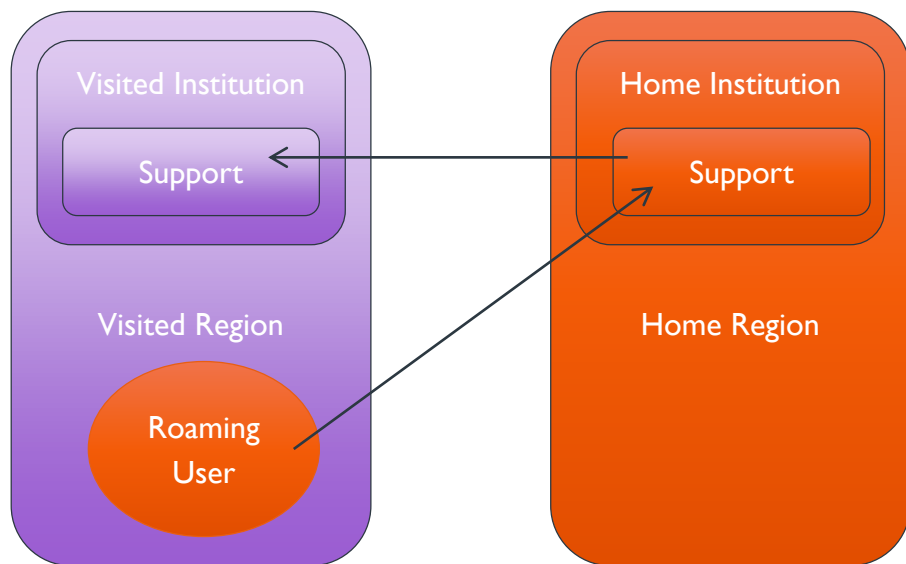
Make it as complex as you need...

# The govroam model





- » A Governance Committee
- » ... advised by a Technical Working Group...
- » ... manages the Jisc Operating Team...
- » ... for the benefit of regional federations and their member organisations



- » The point where the credentials are authenticated holds the answer to the majority of user support queries
- » ... so, users must speak to their Home Organisation in the first instance.
- » Their support team will liaise with the visited site if required.

## » Complete separation\*

- › not all participants can integrate with academia;
- › offer both SSIDs at venues where communities mix, by local agreement.

\*maintain *technical compatibility* to keep option of future integration open...



<https://vimeo.com/153025107>



# Next Steps

## » Phase 1: early adopters (1 year)

- › Small number of early adopters co-fund with Jisc rapid roll out of service;
- › Parallel development of governance structures etc.;
- › Live by **1<sup>st</sup> September**

## » Phase 2: 'steady-state' operations

- › Introduction of mutually-agreed annual subscription charge;
- › Ongoing recruitment of further participants.

## » Join the 'roaming' Jiscmail list

- › <https://www.jiscmail.ac.uk/cgi-bin/webadmin?Ao=ROAMING>

## » Talk locally

- › What public sector venues could usefully carry eduroam?
- › What education sites are visited by public sector bodies?

## » Lobby!

- › e.g. the HSCN survey on N3 replacement includes specific questions on Wi-Fi  
[https://www.surveymonkey.co.uk/r/N3\\_to\\_HSCN](https://www.surveymonkey.co.uk/r/N3_to_HSCN)



**Mark O'Leary**

Head of above net service development

**Jisc**

[mark.o'leary@jisc.ac.uk](mailto:mark.o'leary@jisc.ac.uk)

[jisc.ac.uk](http://jisc.ac.uk)