

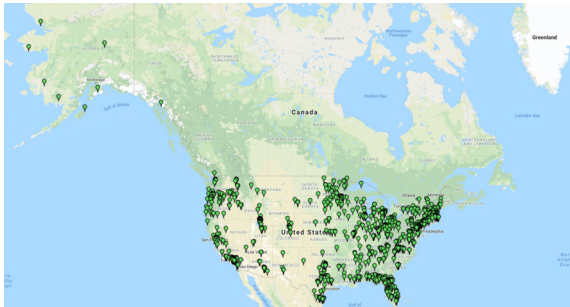
eduroam data, now in color!

Stephanie Cooper

smcooper@anyroam.net

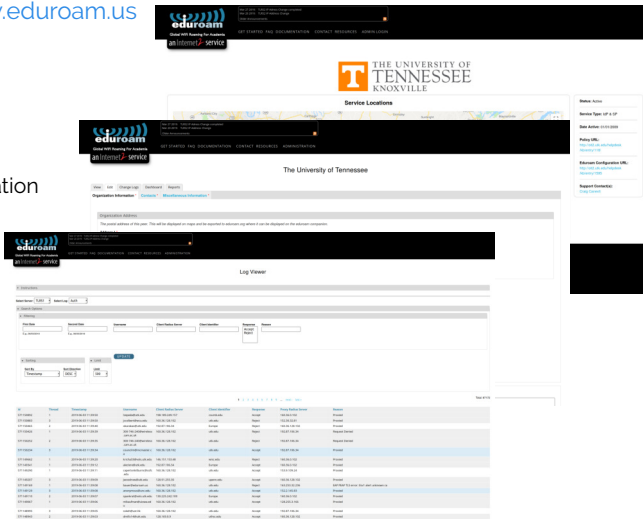
eduroam US federation

- ▶ ~ 700 institutions
- ▶ 2 Top Level Servers
- ▶ > 2,000,000 authentication requests per day
- ▶ Up to 140,000 devices authenticated daily



Accessible through www.eduroam.us

- ▶ Peering pages
- ▶ Documentation
- ▶ Administration tools
 - ▶ RADIUS Configuration
 - ▶ Realm Testing
 - ▶ Test Accounts
 - ▶ Log Viewer

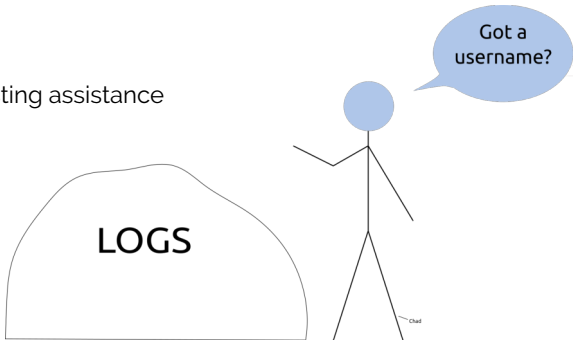


The screenshots illustrate the eduroam self-service platform interface. The top screenshot shows the 'Service Locations' page for The University of Tennessee, featuring a map and navigation links. The middle screenshot shows the 'Log Viewer' page with a table of log entries. The bottom screenshot shows the 'Organization Information' page for The University of Tennessee.

ID	Realm	Timestamp	Username	Client Address	Client Identifier	Response	Reply Status	Reason
01-10-2012	T	2012-10-01 11:00:00	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:01	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:02	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:03	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:04	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:05	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:06	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:07	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:08	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:09	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:10	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:11	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:12	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:13	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:14	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:15	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:16	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:17	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:18	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:19	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success
01-10-2012	T	2012-10-01 11:00:20	eduroam@eduroam.us	192.168.1.100	eduroam	Success	200 OK	Success

User support

- ▶ Peer creation
- ▶ Initial set up and testing assistance
- ▶ Troubleshooting

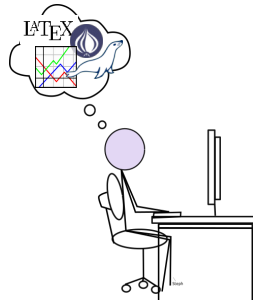


Digest the logs

- ▶ Offer incentive about the health of the service.
- ▶ Demonstrate the service value.
- ▶ Keep the community engaged.

Bringing the logs beyond troubleshooting

Data Analysis Platforms VS Customized System

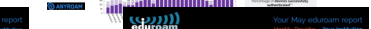
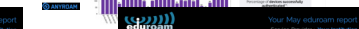


Log statistics

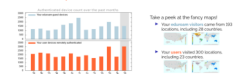
Dedicated custom reports for each institution

- ▶ Targeting administrators and officials
- ▶ Month, semi-annual and annual periods

eduroam reports



This May, your eduroam guest network hosted 3027 devices. You authenticated 3027 devices for your users who travelled across the US and the world.



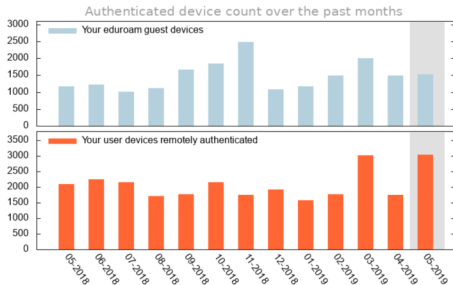
Want more? Follow the link!
Your daily usage, requests and errors for your eduroam guest network and your authentication service.



Service Provider pages
(guest network)

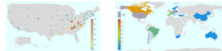
Identity Provider pages
(authentication service)

This **May**, your **eduroam guest network** hosted **1522** devices. You authenticated **3027** devices for **your users** who traveled across the US and the world.

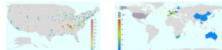


Take a peek at the fancy maps!

- ▶ Your **eduroam visitors** came from 193 locations, including 28 countries.



- ▶ Your **users** visited 300 locations, including 23 countries.



Want more? Follow the links!

- ▶ Your daily usage, requests and errors for your **eduroam guest network** and your **authentication service**.
- ▶ The **How to read your eduroam report** documentation page.

Statistics for your :	guests	users
Authentication success rates*	67.9%	68.1%
Successfully authenticated devices**	71.9%	65.8%

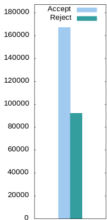
(*) ratio of accepted requests over total number of requests

(**) number of devices with successful authentications over total number of devices

eduroam reports

How are you doing this month?

Your **guest network** sent 259,499 authentication requests with an overall success rate of 64.4% .



Total number of requests
259,499

Accepted
167,224

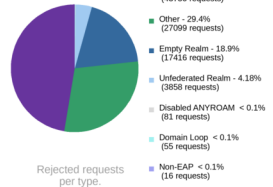
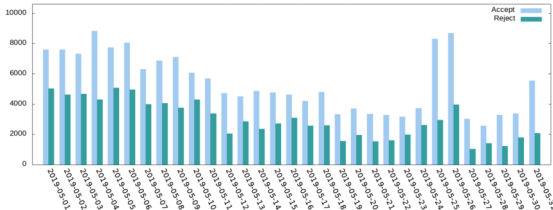
Rejected
92,275

Overall request
success rate* :
64.4%

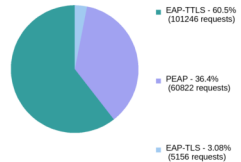
(* ratio of **accepted requests**
over total number of requests)

Period request summary.

Daily Accepted/Rejected requests.



Rejected requests
per type.



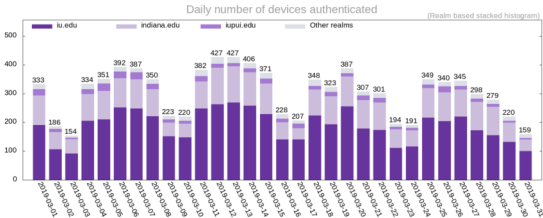
Accepted request
EAP types.

Your **eduroam guest network** request overview

eduroam reports

How many devices does that mean?

Your institution successfully authenticated 86.5% of your user's devices, with a total number of **2500** authenticated devices.



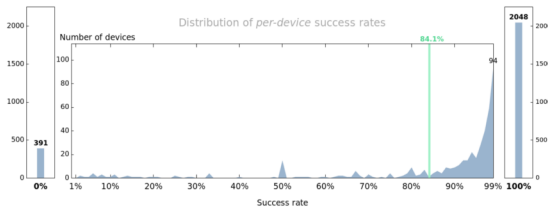
► Total number of unique devices authenticated:

2500

Percentage of **devices successfully authenticated****:

86.5%

(**) number of devices with successful authentications during the time period over total number of devices



► Average success rate per device :

84.1%

Average and maximum number of requests per device

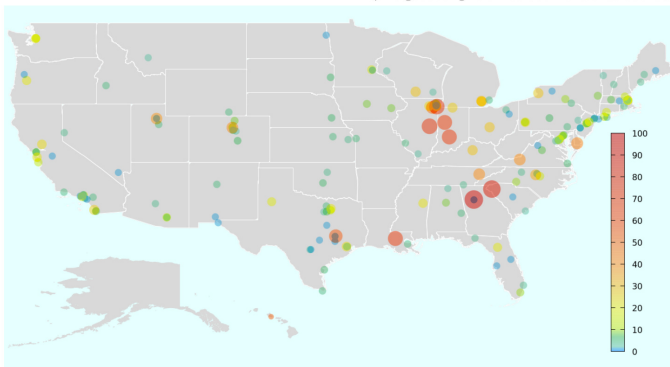
	Accepted	Rejected
Average	50	6
Maximum	2387	1944

Your **authentication service** device statistics

eduroam reports

Roaming in the United States...

Top 25 guest origins on US soil with device count ▶



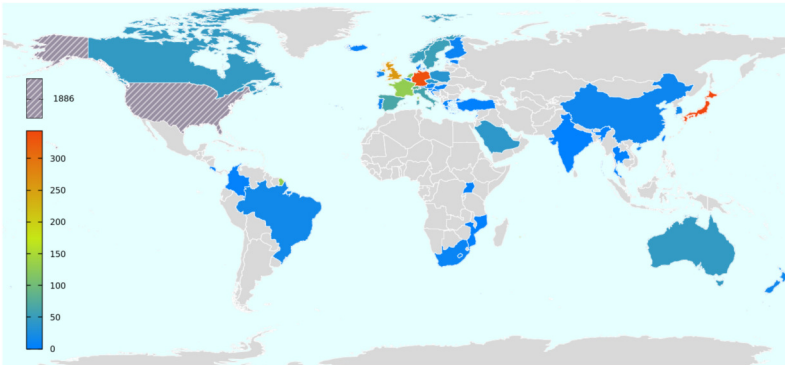
Number of guest devices by institution of origin.

Location	count
Georgia Institute of Technology-Main Campus	92
Clemson University	84
University of Illinois at Urbana-Champaign	69
University of Chicago	68
Louisiana State University and Agricultural & Mechanical College	64
Indiana University-Bloomington	64
Purdue University-Main Campus	63
Texas A&M University	52
Argonne National Laboratory	45
University of Delaware	40
Virginia Polytechnic Institute and State University	38
The University of Tennessee	38
University Corporation For Atmospheric Research	38
University of Utah	36
University of North Carolina at Chapel Hill	31
University of Michigan	28
University of Wisconsin-Madison	26
University of Kentucky	26
Ohio State University	26
University At Buffalo	26
University of California-San Diego	24
University of Notre Dame	24
Internet2	24
Illinois Institute of Technology	23
Fermi National Accelerator Lab	22

Where in the **United States** are your **eduroam** guests coming from?

Top 30 countries with device count ▶

Country	count
USA	1886
Japan	344
Germany	334
United Kingdom	256
France	128
Netherlands	115
Switzerland	85
Spain	65
Italy	60
Sweden	53
Norway	49
Canada	45
Australia	45
Singapore	40
Saudi Arabia	40
Czech Republic	38
Poland	35
Ireland	15
Brazil	15
South Korea	14
New Zealand	13
Denmark	12
China	12
Austria	12
Portugal	11
Belgium	11
Finland	9
South Africa	8
Hungary	7
Luxembourg	6



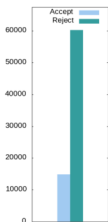
Number of guest devices by country of origin (unknown origin 0%)

Where in the **world** are your **eduroam guests** coming from?

Spotting out characteristics and curiosities

OOPS!

Your institution received 75,060 requests, with an overall request success rate of 19.8% .



Total number of requests

75,060

Accepted
14,848

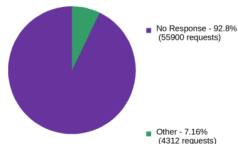
Rejected
60,212

Overall request
success rate* :

19.8%

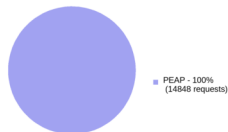
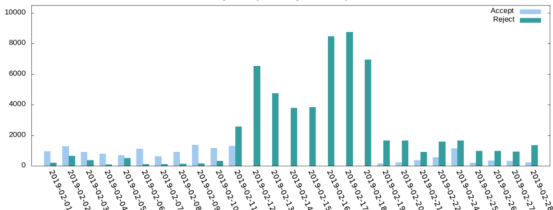
(* ratio of **accepted requests**
over total number of requests)

Period request summary.



Rejected requests
per type.

Daily Accepted/Rejected requests.



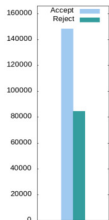
Accepted request
EAP types.

Your **authentication service** request overview

Spotting out characteristics and curiosities

Wildcat migration

Your **guest network** sent 232,793 authentication requests with an overall success rate of 63.7% .



Total number of requests

232,793

Accepted
148,272

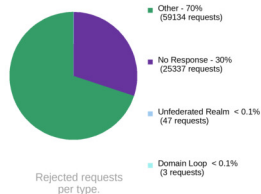
Rejected
84,521

Overall request
success rate* :

63.7%

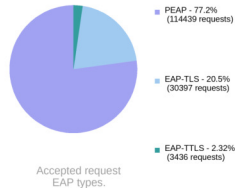
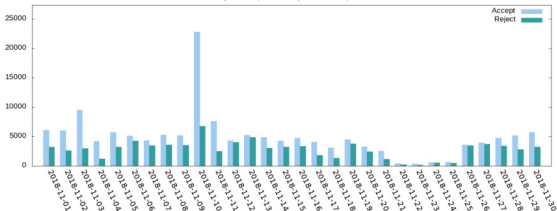
(* ratio of **accepted requests**
over total number of requests)

Period request summary.



Rejected requests
per type.

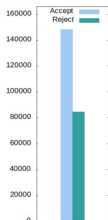
Daily Accepted/Rejected requests.



Accepted request
EAP types.

Your **eduroam guest network** request overview

Your **guest network** sent 232,793 authentication requests with an overall success rate of 63.7% .



Total number of requests

232,793

Accepted
148,272

Rejected
84,521

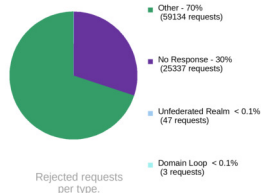
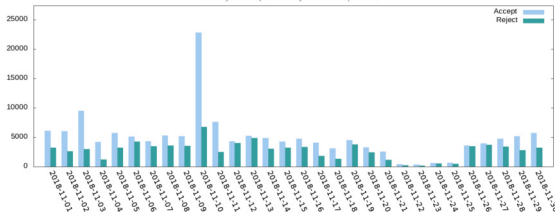
Overall request
success rate* :

63.7%

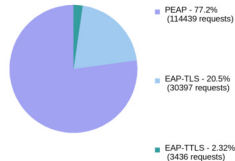
(* ratio of **accepted requests**
over total number of requests)

Period request summary.

Daily Accepted/Rejected requests.



Rejected requests
per type.

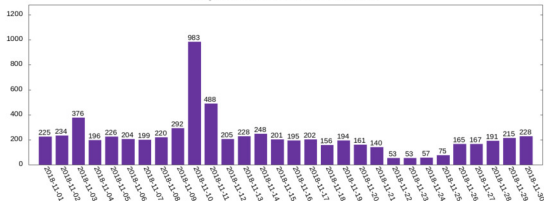


Accepted request
EAP types.

Your **eduroam guest network** request overview

Your **eduroam guest network** hosted **2480** devices. The percentage of your visitors' devices successfully authenticated reached **80.1%**.

Daily number of devices authenticated



► Total number of unique devices authenticated:

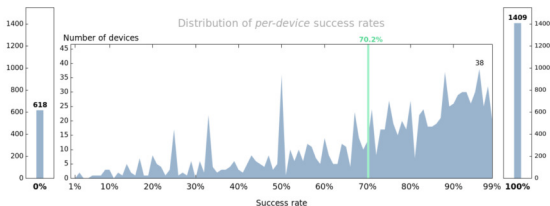
2480

Percentage of **devices successfully authenticated****:

80.1%

(**) number of devices with successful authentications during the time period over total number of devices

Distribution of per-device success rates



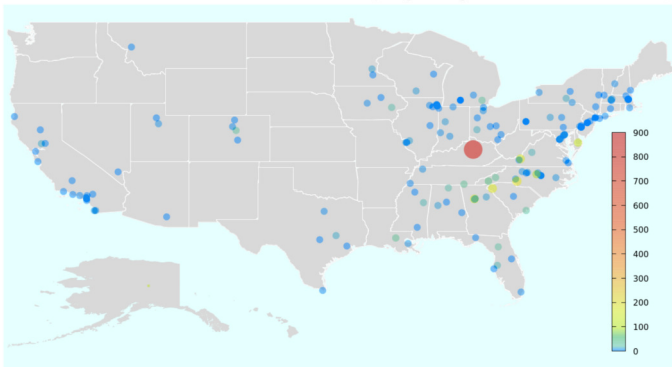
► Average success rate per device : **70.2%**

Average and maximum number of requests per device

	Accepted	Rejected
Average	48	27
Maximum	3606	4293

Your **eduroam guests'** device statistics

Top 25 guest origins on US soil with device count ▶



Number of guest devices by institution of origin.

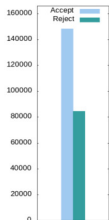
Location	count
University of Kentucky	838
University of North Carolina at Charlotte	168
Clemson University	143
Virginia Polytechnic Institute and State University	133
Georgia Institute of Technology-Main Campus	125
University of Delaware	92
University of North Carolina at Chapel Hill	83
Western Carolina University	40
University of North Carolina at Asheville	26
Louisiana State University and Agricultural & Mechanical College	26
The University of Tennessee at Chattanooga	25
College of Charleston	21
University of Michigan	20
University of Denver	19
University of Florida	18
University of Iowa	17
University of Alabama in Huntsville	17
University of South Florida	15
Mississippi State University	15
Washington and Lee University	14
University of Dayton	13
Cornell University	12
University of California-Davis	11
Texas A&M University	11
University of Minnesota-Twin Cities	9

Where in the **United States** are your **eduroam** guests coming from?

Spotting out characteristics and curiosities

Wildcat migration

Your **guest network** sent 232,793 authentication requests with an overall success rate of 63.7% .



Total number of requests

232,793

Accepted
148,272

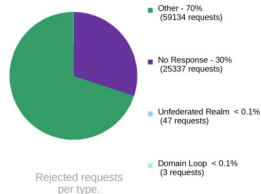
Rejected
84,521

Overall request
success rate* :

63.7%

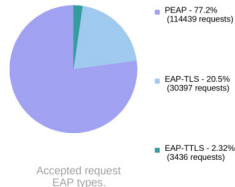
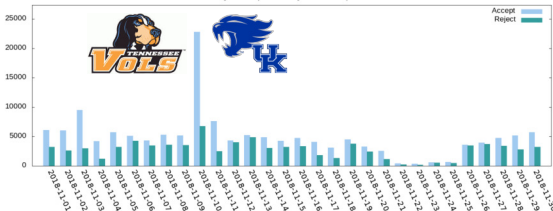
(* ratio of **accepted requests**
over total number of requests)

Period request summary.



Rejected requests
per type.

Daily Accepted/Rejected requests.



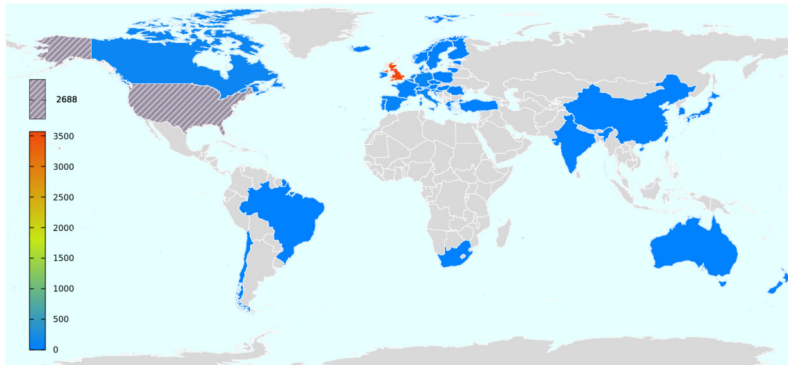
Accepted request
EAP types.

Your **eduroam guest network** request overview

Spotting out characteristics and curiosities

A dedicated student exchange?

Top 30 countries with device count ▶

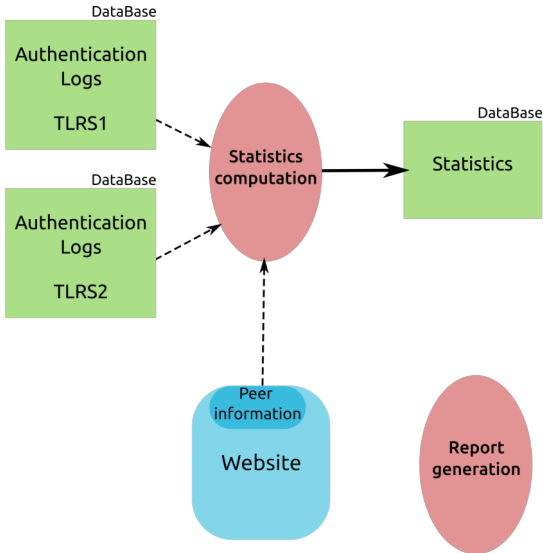


Number of guest devices by country of origin (unknown origin <0.1%)

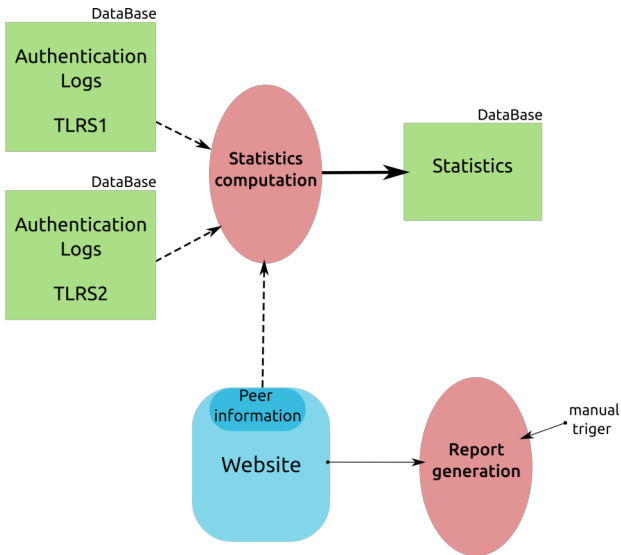
Country	count
United Kingdom	3576
USA	2688
Italy	101
Canada	101
Germany	85
Spain	72
Netherlands	61
Switzerland	36
Sweden	29
France	27
Norway	20
Portugal	16
Belgium	14
Denmark	12
Ireland	11
Chile	11
Finland	8
Austria	8
Australia	8
Hong Kong	7
Turkey	5
Singapore	5
Luxembourg	5
Poland	4
Japan	4
Brazil	4
South Korea	3
Hungary	3
Greece	3
Czech Republic	3
UNKNOWN	1

Where in the **world** are your **eduroam guests** coming from?

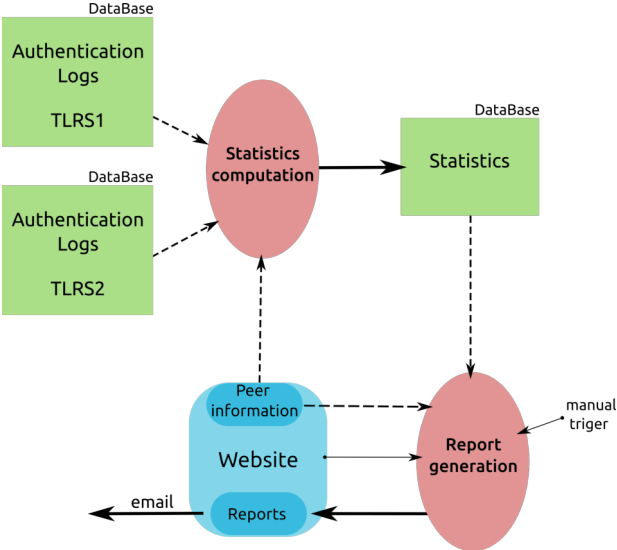
Reporting System Overview



Reporting System Overview



Reporting System Overview



Reporting System

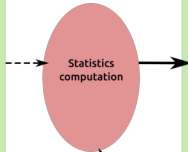
Statistics

DataBase

Authentication Logs

Server_authentication_logs

Timestamp
Username
Realm
Calling-Station-Id
Client_Identifier
Proxy_Identifier
Response
Reason
Operator-Name
eduroam-SP-Country
EAP-Type



DataBase

Statistics

Request_Statistics

Timestamp
Period
From
To
Realm
Operator-Name
Server Accepts/Reject counts
Unique Device counts
Per error type request count

Unique_Devices_statistics

From
To
Username
Calling_St_Id
Operator-Name
Realm
day_bimasks
Accepts/Rejects counts

Daily_UD_key_counts

Device_Id
Per-day Accepts counts
Per-day Rejects counts

EAP Daily statistics

Date
From
To
Realm
Operator-Name
EAP-Type
Accepts/Rejects counts

Extra_Realm_Country

Realm/Operator
Country

Location_Coordinates

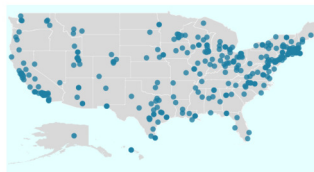
Location
Coordinates



Your April group report Your institution group

Institution	Identifier	Service
Catholic University of America	cua.edu	SP & IdP
Georgia Institute of Technology-Main Campus	gatech.edu	SP & IdP
John Carroll University	jcu.edu	SP & IdP
Marine Biological Laboratory	mbi.edu	SP & IdP
Otterbein University	otterbein.edu	SP & IdP
University of South Carolina-Columbia	sc.edu	SP & IdP
St. Mary's University	stmaryx.edu	SP & IdP
University of Akron Main Campus	uakron.edu	SP & IdP
University of Massachusetts Medical School Worcester	umassmed.edu	SP & IdP
University of Guam	uog.edu	SP & IdP
Vassar College	vassar.edu	SP & IdP
Yale University	yale.edu	SP & IdP
Berklee College of Music	berklee.edu	SP & IdP
Chaminade University of Honolulu	chaminade.edu	SP & IdP
Dartmouth College	dartmouth.edu	SP & IdP
Georgetown University	georgetown.edu	SP & IdP
Johns Hopkins University	jhu.edu	SP & IdP
Montgomery County Community College	mc3.edu	SP & IdP
Northern Arizona University	nau.edu	SP & IdP
University of Oklahoma Norman Campus	ou.edu	SP & IdP
Southern California University of Health Sciences	scuhs.edu	SP & IdP

Institution	Identifier	Service
St. Olaf College	stolaf.edu	SP & IdP
University of Arkansas	uark.edu	SP & IdP
University of Massachusetts-Office of the President	umassp.edu	SP & IdP
University of Oregon	uoregon.edu	SP & IdP
Virginia Commonwealth University	vcu.edu	SP & IdP
York College of Pennsylvania	ycp.edu	SP & IdP
Bethel University	bethel.edu	SP & IdP
Chapman University	chapman.edu	SP & IdP
Davidson College	davidson.edu	SP & IdP



Known primary locations for the group.

gathers 352 institutions. 336 are **service** and **identity** providers
 a **service providers** only (SP), and 5 are **identity providers** only (IdP).



anyroam.net

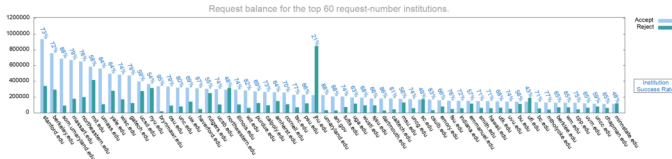
2019-04-01 - 2019-04-30





Your April group report Service Provider : **Your institution group**

Your group counts 25 institutions with a success rate superior to 80% and 294 with a success rate under 20%. 24 institutions have no SP data and might be misconfigured.



Institutions with the **best Success Rates** :

Identifier	Succ. Rate	Request count
nyisernet.org	100%	3
brynmawr.edu	95%	355793
ttl.tamu.edu	90%	14371
sticop.edu	90%	19730
cscsdut.org	90%	10
wsc.edu	88%	8538
umaryland.edu	88%	255580
som.umaryland.edu	88%	779101

Institutions with the **lowest Success Rates** :

Identifier	Succ. Rate	Request count
georgetown.edu	0%	72
integrationpartners.com	0%	4446
ttu.edu	0%	53
unoh.edu	1%	2132
whoi.edu	2%	98750
uog.edu	4%	4319
utsystem.edu	11%	5785
internet2.edu	12%	1841
mwcc.edu	13%	23645
wvhepc.edu	13%	31

The SP without data includes:

- conehealth.com
- umwestern.edu
- wheelock.edu
- psi.edu
- tamusa.tamusa.edu
- educause.edu
- tamu.edu
- nrao.edu
- wipac.wisc.edu
- smcm.edu
-



stitution **guest networks** requests summary

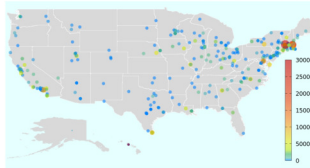
2019-04-01 - 2019-04-30

Group Reports



Your April group report Your institution group internal roaming

Service Provider



Number of guest devices by institution of origin.

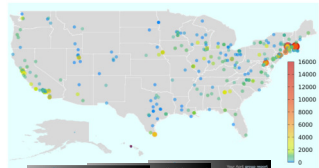
Top 10 Intra-group guest origins with device count

Location	count
University of Massachusetts Amherst	27956
Boston College	23706
Wentworth Institute of Technology	16051
University of Maryland-Baltimore	12240
California State University-Fullerton	11114
Emmanuel College	10208
The University of Texas Rio Grande Valley	8265
Cornell University	7802
University of Delaware	6309
University of North Carolina at Chapel Hill	6305

Identity Provider

Top 10 Intra-group user destinations with device count

Location	count
Northeastern University	15952
Amherst College	15420
Berklee College of Music	13947
Massachusetts Institute of Technology	12708
Tufts University	11065
Massachusetts College of Art and Design	9864
University of Maryland - School of Medicine	9340
Wentworth Institute of Technology	7741
Yale University	7586
New York University	7578



stitution.

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Reporting system active since May 2018

Current work

- ▶ Group reports
- ▶ Custom period
- ▶ Alerting
- ▶ Federation wide statistics

Coming challenges

- ▶ Report period scalability
- ▶ Hotspot 2.0 : a new category of users
- ▶ RadSec : how to convey the location information?

Questions?

eduroam US website

www.eduroam.us

How to read your eduroam report

www.eduroam.us -> Documentation