

## European eduroam service: international traffic and coverage analysis

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### European eduroam service

The European eduroam service has been in production since September 2008. Although the critical technical infrastructure (the European RADIUS servers' hierarchy) had been in place earlier, supporting the pilot service since September 2007, it was not until the supporting services were established (at the end of August 2008) that the eduroam service was considered production-quality.

The purpose of the supporting services is to complement the core eduroam technology infrastructure by providing a comprehensive service to the GÉANT community.

These supporting services include:

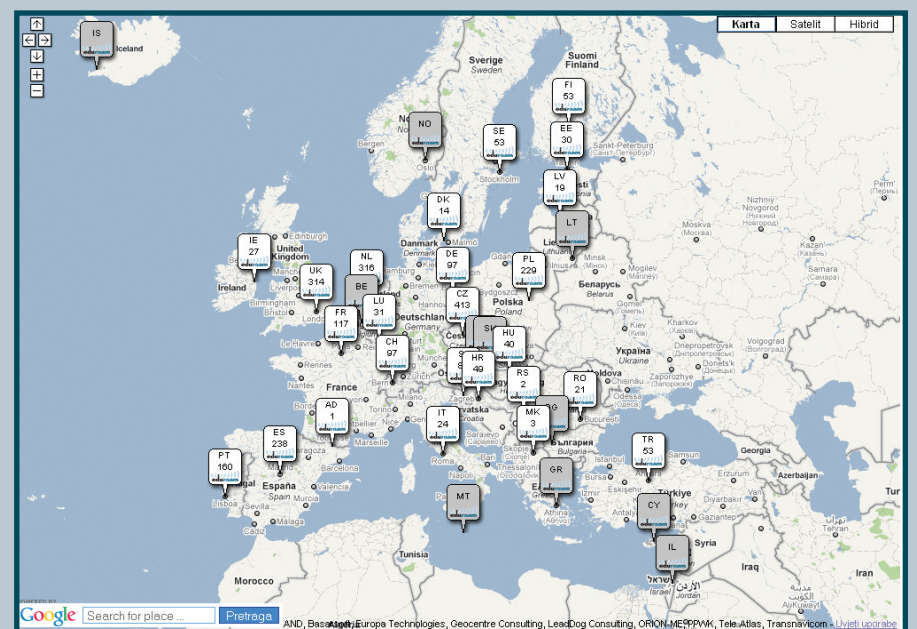
- monitoring service
- eduroam database
- eduroam website
- trouble ticketing system (TTS).

With the introduction of the supporting services we officially started gathering data about eduroam usage and coverage in order to provide indicators of the quality of the eduroam service.

Today the European eduroam confederation has 36 member countries. The eduroam database currently holds information from 25 countries. In total there are 772 institutions offering eduroam service at 2490 locations across Europe.

### European eduroam map

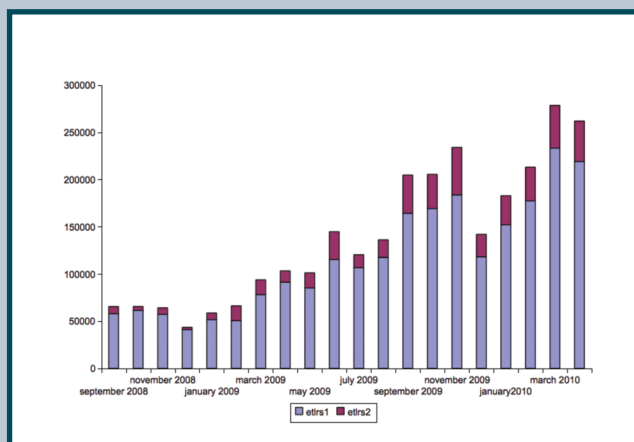
The map shows the position of each and every service location registered in the eduroam database and provides an overview of the eduroam coverage in Europe (countries which are not providing info are marked with the grey label).



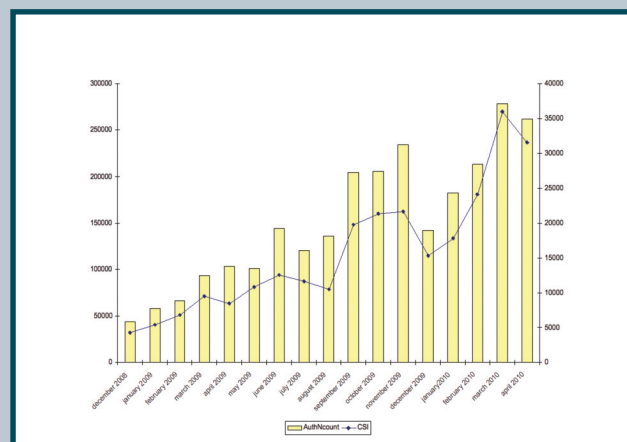
This map tool is based on Google maps technology and it is being regularly (re)generated once per day. The aim of this tool is to help end users in finding the eduroam service locations. The same data is also provided to the augmented reality applications for mobile phones (e.g. Wikitude, Layar) providing further support for the users of those devices.

### International traffic analysis

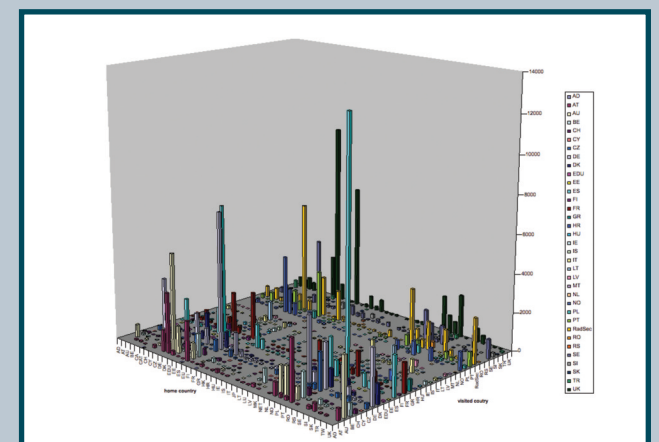
Due to technological constraints, it is not possible to provide the exact number of individual roaming users per day. Instead, the number of authentication requests handled by the European top-level RADIUS servers (ETLRSs) has been recorded, starting from April 2008 for ETLRS2 and from May 2008 for ETLRS1. In addition, from December 2008, the RADIUS attribute Calling-Station-ID (CSI) has been properly registered within the ETLRSs logs. This allows the use of another type of report in which only one authentication request is counted per day per CSI (i.e. per client). The assumption is that one client is used only by one user, and therefore the number of different users per day can be estimated. It should be noted that information on Europeans roaming outside the European confederation, and on roamers coming from countries outside European confederation is included in this analysis.



This graph provides information about cumulative, international traffic, and shows the number of successful authentication requests on a monthly basis. Those numbers show only the information about the international traffic. Therefore we expect much higher usage level when the national (local) eduroam traffic is taken into account.



A comparison between the total number of successful authentication requests (AuthNcount) and the number of successfully authenticated clients per day, using the CSI attribute (CSI) is presented with this graph.



Based on the CSI count, the above graph shows the number of authenticated clients per day and per country (i.e. eduroam federation) in the period May 2009 through April 2010. Federation labelled "RadSec" cumulatively represents countries in which RADIUS over TLS (i.e. RadSec) is used on the SP side (e.g. Netherlands (.nl)).