

4.4 External Traffic per Student

External traffic per student per year can be seen as a measure of relative network size; it provides one way of comparing NRENs from countries of different sizes.

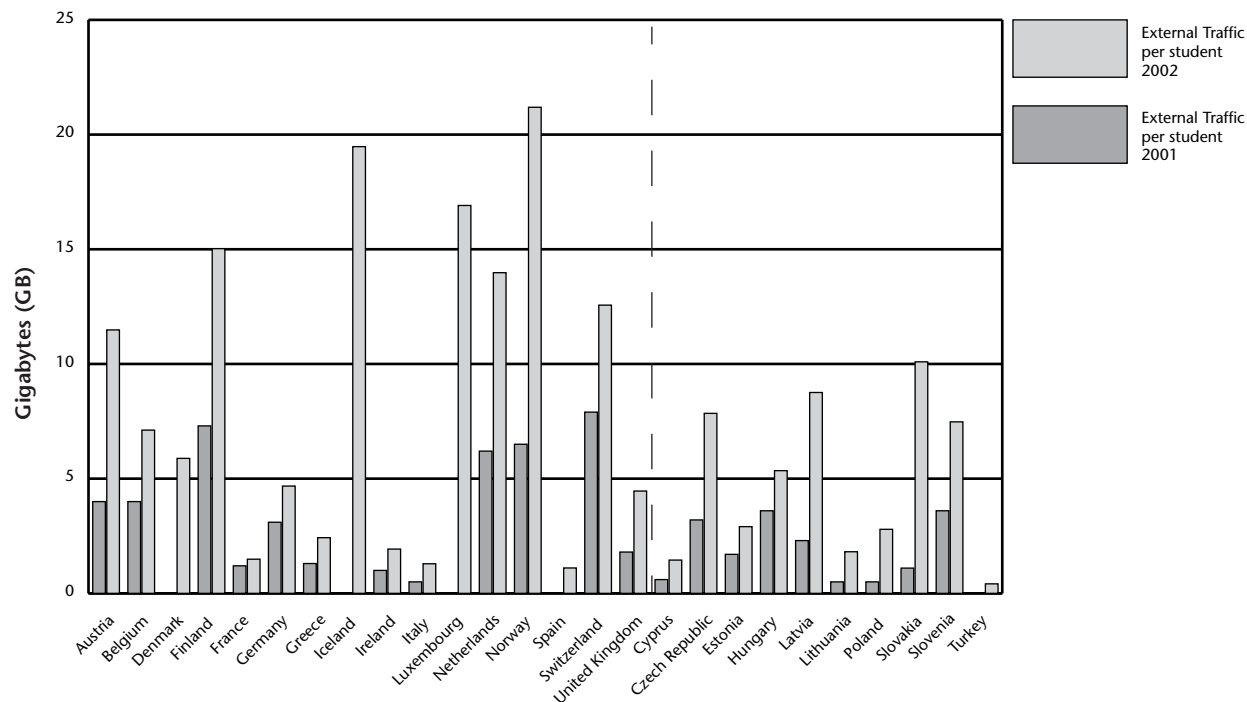
Graph 4.1.3 presents a picture of fierce traffic growth in absolute terms, when comparing 2001 with 2002. The graphs in this section show high traffic growth in terms of traffic per student as well.

Note that for countries with two NRENs, the figures from both organisations have been taken together for the purpose of preparing this graph.

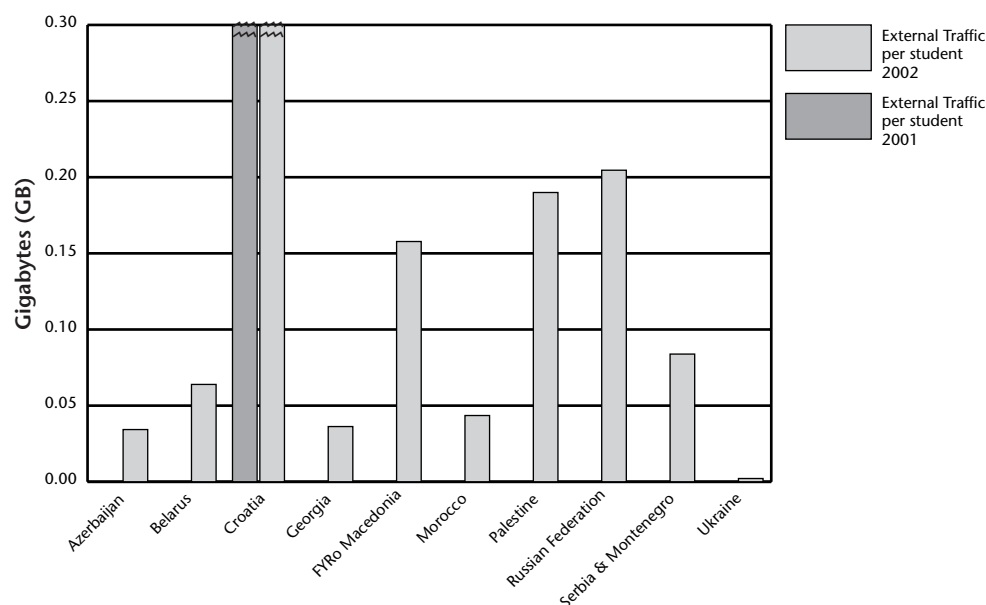
Note that the data of 2001 and 2002 may not be completely comparable for all countries, due to slight differences in formulating the survey questions. Note also that much of the traffic is not generated by students, but for example by research institutions. Also, the traffic is not divided equally over all users. Therefore, these graphs do not represent the amount of traffic generated by the average student. It only gives the total amount of external traffic on the NREN (generated by all of the users) divided by the total number of tertiary education students in a country.

In graph 4.4.2, the figure for Croatia for 2002 is outside of the range of the scale; it is 1.2 GB per student in 2001 and 4.9 GB per student in 2002.

Graph 4.4.1 External Traffic per Student: EU, EFTA and Candidate Countries



Graph 4.4.2 External Traffic per Student: Other Countries



4.5 Connectivity to GÉANT per Student

The following graph gives the average connectivity to GÉANT and NORDUnet per student and per country, in Kb/s.

Note that many factors affect this picture. Firstly, the Internet connectivity is not provided for or needed by students only, but also for researchers. The needs of researchers can vary greatly from country to country. Secondly, bandwidth cannot be provided in small incremental amounts, but is available in certain classes (e.g. 155 Mb/s or 2.5 Gb/s). Thirdly, certain applications (such as for grid computing) require large amounts of bandwidth. If those applications are being used in a small country, the needed bandwidth per student will be much higher than for countries with a large student population. For this reason alone, one would expect countries with a larger student population to have a lower connectivity per student - as is indeed the case in many countries.

At best, this graph can be seen as only a rough indicator of how adequate the GÉANT connection is in relation to the student population of a country.

The picture for Switzerland is distorted, because the link to GÉANT is shared between SWITCH and CERN. Luxembourg is outside of the scale of the graph - it has a connectivity of 64 Kb/s per student.

Graph 4.5 Connectivity to GÉANT/NORDUNET per Student

