

## Mathea Fammels

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**From:** Kurt Erik Lindqvist [kurtis@netnod.se]  
**Sent:** 30 May 2008 17:08  
**To:** ENISA Economics NIS  
**Cc:** Nimpuno Nurani  
**Subject:** Comments on Security Economics and the Internal Market

Stockholm 2008-05-30

Dear Sirs,

I am writing to you with regards to the report " Security Economics and the Internal Market" ([http://www.enisa.europa.eu/doc/pdf/report\\_sec\\_econ\\_&\\_int\\_mark\\_20080131.pdf](http://www.enisa.europa.eu/doc/pdf/report_sec_econ_&_int_mark_20080131.pdf)). I would especially like to comment on recommendation #12 in the report:

12: As for critical national infrastructure, one particular problem is the lack of appropriate incentives to provide resilience in competitive network markets.

We recommend that ENISA sponsor research to better understand the effects of Internet exchange point (IXP) failures. We also recommend they work with telecomms regulators to insist on best practice in IXP peering resilience.

Netnod Internet Exchange with its headquarters in Stockholm, Sweden, is one of the oldest Internet exchanges in Europe. Its predecessor, D- GIX, was a function of the Royal Institute of Technology (KTH) from around 1992 onwards. In 1996, the Swedish operators jointly recognised the importance of a reliable infrastructure for local exchange of traffic. As a result of this, Netnod was formed under the not-for-profit TU-Foundation with the explicit goal of providing diverse, local, and resilient peering infrastructure across Sweden.

Since its inception, Netnod has built fully separate and redundant exchange points in five cities in Sweden, from Malmö in the south to Luleå in the north. Acknowledging the importance of Stockholm as the capital with its concentration of telecommunications operators and infrastructure, Netnod operates two redundant and separate facilities in Stockholm.

In addition to providing standalone and redundant exchange points, Netnod has also in cooperation with the Swedish government and the Swedish regulator, physically located the exchanges in underground secure bunkers operated by the regulator for the provision of critical telecommunications infrastructure.

Netnod's robust operations, its development in cooperation with operators, key stakeholders and government, its dedication to resilience and its history of responding to the needs of the Internet operators, are in no way unique for Netnod, but shared among IXPs in Europe.

~~Netnod feels that the recommendation in the report fails to acknowledge this when calling for further regulation of IXPs.~~

As for the mention of best practices of IXPs in the report, the European IXPs already operate a common forum for the exchange of best practices in the form of the Euro-IX association (<http://www.euro-ix.net>). This collaborative work has been on-going for several years.

Therefore, Netnod does not believe that any regulatory intervention with regards to IXP best practices is necessary or beneficial.

Furthermore, it is worth noting that although exchange points help reduce cost, increase redundancy and resilience for Internet operators, the exchange of Internet traffic in no way is solely dependent upon IXP. Internet operators also exchange traffic directly between each other over what is known as "private peering links", which to effect are multiple redundant dedicated connections. This fact seems to have been ignored by the report.

In addition to this, the report also fails to acknowledge the role of Internet transit, which is the cost clearing scheme under which providers pay larger providers to carry their traffic to parts of the world outside their own foot print.

Internet exchanges are in general non-profit and operate a pricing scheme that is "at cost". The usefulness and cost effectiveness as seen from the operators, benchmark the Internet exchanges against current Internet transit pricing. If Internet exchanges are forced to incur costs beyond the levels today, for example through regulation, this would result in increased costs for the Internet operators peering at the exchange point. The likely result of this would be that Internet operators are forced to move to a model of traffic exchanged solely over transit links and/or private peering, thereby increasing cost and reducing overall network resilience. It is obvious that such a result is undesirable.

In summary, Netnod believes the current operations of Internet exchanges in Europe today are robust resilient. Therefore, Netnod does not believe that further regulation of Internet exchanges is necessary, nor desirable.

Best regards,

Kurt Erik Lindqvist  
CEO, Netnod Internet Exchange Ab