

Netnod Internet Exchange

SIG-IX presentation
APRICOT 2006

Kurtis Lindqvist
<kurtis@netnod.se>



© 2007 - Netnod AB <http://www.netnod.se/>

2007-02-28

History

- Netnod was formed from then D-GIX at KTH-NOC in 1996 / 1997
- Reason for creating Netnod was to create an independent and resilient exchange infrastructure
- Early on focus was on redundant systems
 - Also from a national infrastructure point-of-view



History

- At the time of creation
 - Government report that cited Internet as critical national infrastructure
 - That some of that infrastructure was more important than other
- Design of Netnod was influenced by the view on national security

Physical separation / redundancy

- Early on it was decided that the exchange of traffic had to work even in times of national crisis
 - Stockholm would not be a focus point
 - Any backup site had to survive on it's own
- Search for suitable locations started
 - And turned out to be a fairly complex process



2007-02-28



© 2007 - Netnod AB <http://www.netnod.se/>

Other effects of the diversity

- Early on local exchange of traffic was seen as a possible “Good thing™”
 - However turned out to be somewhat harder than first thought
 - Until around 1999 traffic was still sent through Stockholm even for ISPs connected to Gothenburg
- This slowly changed
- Today a lot of traffic is exchanged locally
 - Gives overall better performance

2007-02-28



© 2007 - Netnod AB <http://www.netnod.se/>

Connecting to Netnod

- In Stockholm the charges for connecting to Netnod includes the cost for two separately routed fiber pairs.
 - One to each bunker
 - The bunkers are not interconnected
- In the other cities, the ISP have to find a fiber provider themselves
 - Co-ordination needed to patch through to us
- The cities are not interconnected

2007-02-28



© 2007 - Netnod AB <http://www.netnod.se/>



2007-02-28



© 2007 - Netnod AB <http://www.netnod.se/>

Critical infrastructure

- It was decided that it was of importance to locate some of the critical common Internet infrastructure at the Exchange points as well
- Netnod have tried to develop the amount of services available at the exchanges

Common Services

- Official Swedish time through NTP
 - In Malmö, Sundsvall, Gothenburg and one bunker in Stockholm
 - i.root-servers.net
 - .SE TLD-service
 - Stockholm, Gothenburg, Sundsvall
 - A number of TLDs in Stockholm
 - Among others Verisign's .com and .net
 - .DK, .NL, .DE, .NO etc.
 - Copy or RIPE routing registry in Stockholm
-

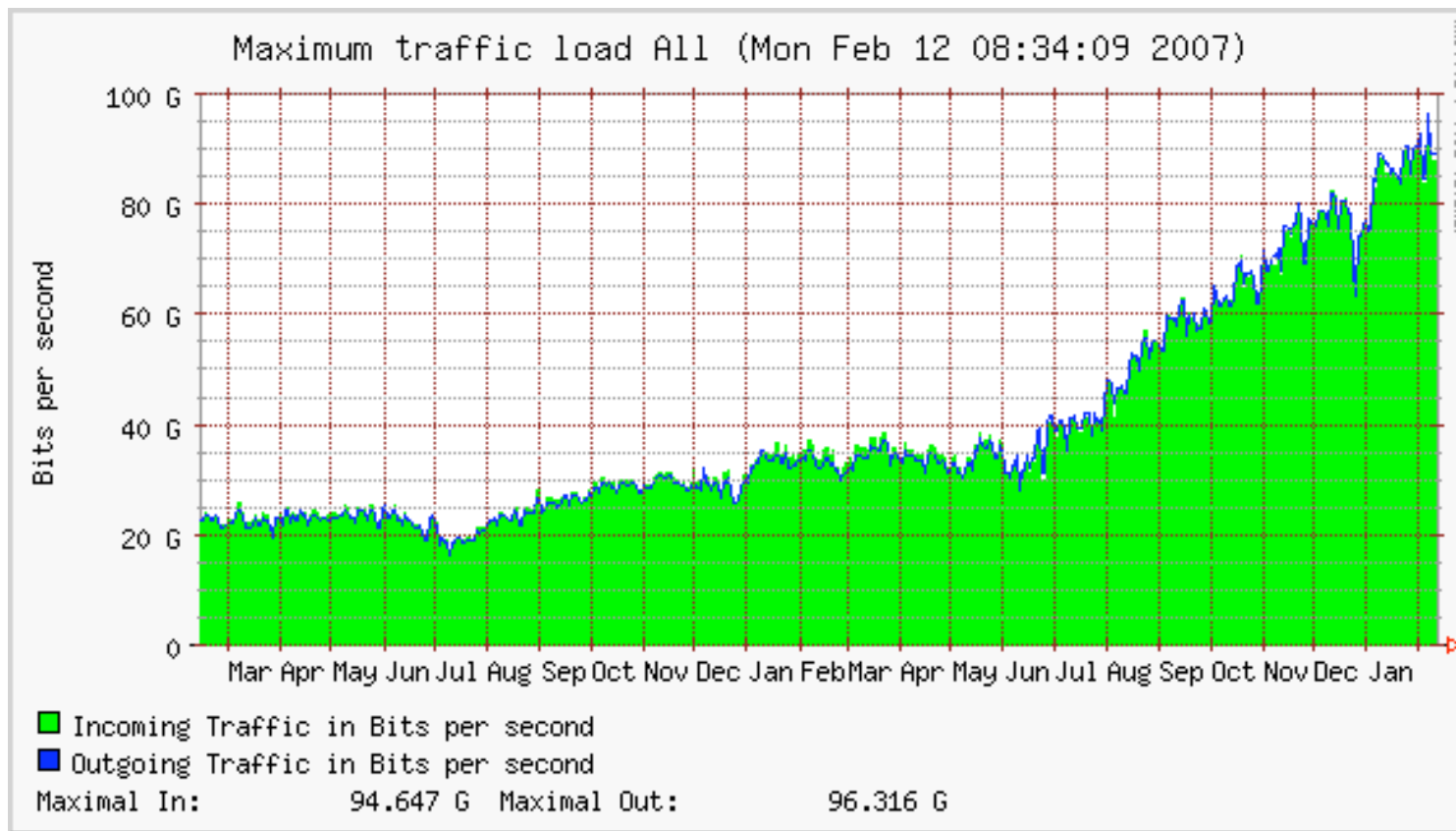
2007-02-28



© 2007 - Netnod AB <http://www.netnod.se/>

Connected customers

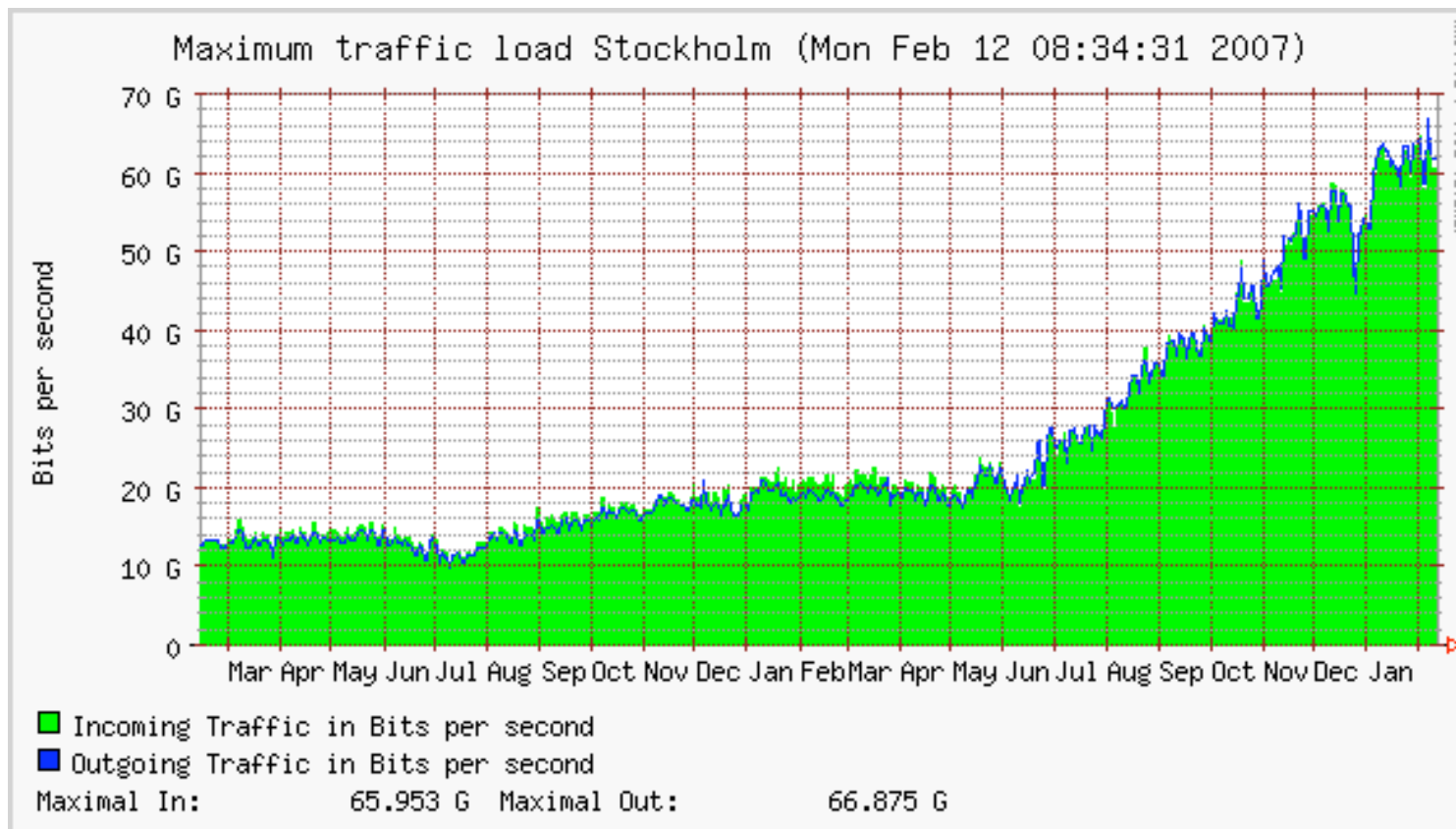
City	GE	10GE
Stockholm	31	11
Gothenburg	10	3
Malmö	9	6
Sundsvall	9	3
Luleå	3	N/A



2007-02-28



© 2007 - Netnod AB <http://www.netnod.se/>



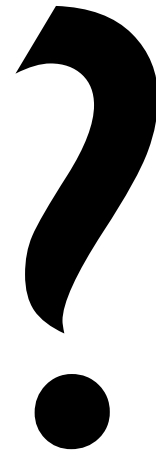
2007-02-28



© 2007 - Netnod AB <http://www.netnod.se/>

News: Pricing structure

- Invoiced quarterly in advance
- Fees per year
 - Stockholm outer city
 - 2x10GE: 410k SEK (\$58.6k)
 - 2x1GE: 310k SEK (\$44.4k)
 - Stockholm inner city:
 - 2x10GE: 325k SEK (\$46.5k)
 - 2x1GE: 225k SEK (\$32.2k)
 - Malmö/Gothenburg/Sundsvall:
 - 10GE: 140k SEK (\$20k)
 - 1GE: 90k SEK (\$12.9k)



Contact

Netnod Internet Exchange i Sverige AB

Bellmansgatan 30^I

SE-118 47 Stockholm

Sweden

Office address: Bellmansgatan 30^I

Telephone: +46-8-615 85 70

Telefax: +46-8-442 09 67

E-mail: kurtis@netnod.se

URL: <http://www.netnod.se/>



© 2007 - Netnod AB <http://www.netnod.se/>

2007-02-28