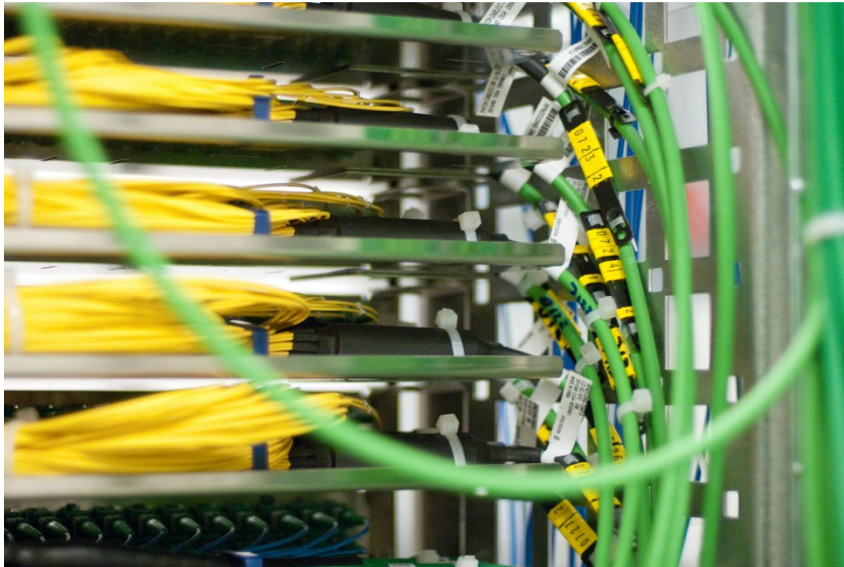


How much do businesses pay for a bandwidth of 100 Mbit/s?



A comparative study between 11 cities



Foreword

In early summer 2011, the City of Stockholm through its IT infrastructure company Stokab assigned United Minds to survey corporate rates for 100 Mbit/s bandwidth in a number of cities around the world.

The background was interest in fleshing out the surveys of corporate broadband connection rates that had been conducted by the newspaper Computer Sweden, as well as the need to view Stockholm rates in an international perspective.

Ever since 2002, Computer Sweden has regularly compared corporate rates for broadband connection in Sweden. The latest survey in January 2011 showed that rates for 100 Mbit/s bandwidth had continued to decline and were lowest in Stockholm.

To permit an international perspective, United Minds was assigned to survey corporate access, to and rates for, broadband connection in a number of cities around the world, as well as to survey Stockholm once again. United Minds also asked about the ability to rent dark fiber connection and the rates involved.

Access to, and rates for, high-speed connections affect both businesses and individual citizens. They are among the factors that shape the business climate, but they are particularly important in cities with a high concentration of knowledge-intensive businesses. Because such businesses need and use a number of different IT solutions, access to high-speed broadband at low rates makes it easier for them to run and expand their operations.

One target of Sweden's broadband strategy is that 90 per cent of households will have access to bandwidth of at least 100 Mbit/s by 2020. The strategy also includes encouraging effective competition that will lead to lower rates. The results of this survey show that broadband providers in Stockholm offer low rates in an international perspective, one reason for which is a well-functioning market.

Summary

Background

On behalf of the City of Stockholm – through Stokab, its IT infrastructure company – United Minds conducted a survey about what businesses pay for 100 Mbit/s bandwidth in 12 cities around the world (providers in 11 cities responded) and about the ability to rent dark fiber connections.

Results for 100 Mbit/s bandwidth

A comparison between the cities that responded to the survey shows that Stockholm rates are very low from an international point of view. The Stockholm market appears to be well-developed given that the rates of the various actors do not differ significantly.

Stockholm businesses pay a low rate for 100 Mbit/s bandwidth. The average rates in each other Nordic capital are higher than in Stockholm. Rates average three times as much in capitals on the European Continent and approximately four times as much in New York. Only Singapore is lower among the cities that were compared.

The average monthly rate in Stockholm is SEK 5,195. The corresponding figures are SEK 7,764 for the Nordic capitals, SEK 14,812 for the capitals on the Continent, SEK 20,269 for New York, SEK 17,148 for Seoul and SEK 3,481 for Singapore.

Results for dark fiber

The results for rental of dark fiber connections exhibited essentially the same pattern as 100 Mbit/s bandwidth. At SEK 2,921 per month, Stockholm has the lowest rate. Singapore, which has the lowest rate for 100 Mbit/s bandwidth, has SEK 8,913 per month for dark fiber. Helsinki is the second cheapest at SEK 6,449 per month, whereas New York is the most expensive at SEK 41,378. The Copenhagen rate is SEK 8,184 rate per month. The corresponding figures are SEK 12,263 for Paris and SEK 13,247 for London.

About the survey

Background: Recurring Swedish comparisons of corporate rates for broadband connection

Ever since 2002, Computer Sweden has regularly compared corporate rates for broadband connections in Sweden. The latest survey in January 2011 showed that rates for 100 Mbit/s bandwidth had continued to decline. The first survey identified a rate of SEK 150,000. The most recent survey found that the lowest rates were available in Stockholm. The corporate list price for 100 Mbit/s bandwidth was SEK 5,500 per month. The corresponding figure for the rest of Sweden was SEK 9,500 per month.

To permit an international perspective, United Minds surveyed – on behalf of the City of Stockholm through Stokab – corporate access to, and rates for, broadband connection in a number of cities around the world. The study was conducted in late summer and early autumn 2011, as well as Stockholm once again in November 2011.

Methodology

Data collection by requesting offers from providers in 12 cities

United Minds contacted a total of 57 Internet providers in Stockholm, Copenhagen, Oslo, Helsinki, Amsterdam, Berlin, London, Paris, Prague, New York, Seoul and Singapore, primarily by phone and secondarily by e-mail.

Each provider was asked whether it offered businesses 100 Mbit/s downstream and upstream bandwidth to common addresses in its city. Providers that responded in the affirmative were asked for their connection fees and their monthly fees for 36 months.

All providers were also asked initially whether they offered dark fiber – dedicated fiber connection between two addresses in the city. The addresses were located 2 kilometers apart in areas that already had fiber networks. Suppliers that responded in the affirmative were asked for the connection fee, both for properties that were already connected to the fiber network and those that were not connected but for which fiber was available in a nearby property, and the monthly fee with a 36-month contract.

Summary of comparability for monthly broadband rates

The rate information that we received has been reworked in the summary in order to ensure comparability.

Providers of 100 Mbit/s bandwidth with a household offering only (absence of a guarantee with respect to minutes connected, etc.) were first screened out. Generally speaking, rates offered to individuals are considerably lower than those

offered to businesses and are associated with poorer maintenance and quality. Prague was dropped from the survey since none of its providers responded to the questions.

The connection fee was then added to the fee for a 36-month connection and the sum was divided by 36. The purpose was to ensure comparability with respect to monthly rates given that providers break down their own costs for connection, operation and maintenance differently according to the particular pricing model involved. The rates were converted to Swedish kronor based on the exchange rate coefficients in Table 1 (see appendix).

The same method was used to compare rates for dark fiber connections. The connections used were for properties already connected with fiber.

Comments on data collection

The data collection process showed that the ability to quickly obtain rate information and/or an offer for broadband connection differs substantially among providers and cities. The clearest tendency is that former monopolies in the telecom sectors of the various cities take longer to send information about accessibility and rates. It can take up to two months to obtain a response to a clearly specified request for an offer.



Results: Accessibility and rates, 100 Mbit/s bandwidth

Stockholm

Eight Stockholm providers responded. All of them offer 100 Mbit/s bandwidth within the relatively narrow range of SEK 3,894-6,819 per month, including the connection fee. The average rate is SEK 5,195. Two providers are just above SEK 4,500, three are just below SEK 6,000 SEK, and the most expensive one is just below SEK 7,000. Thus, there appears to be vigorous competition in Stockholm.

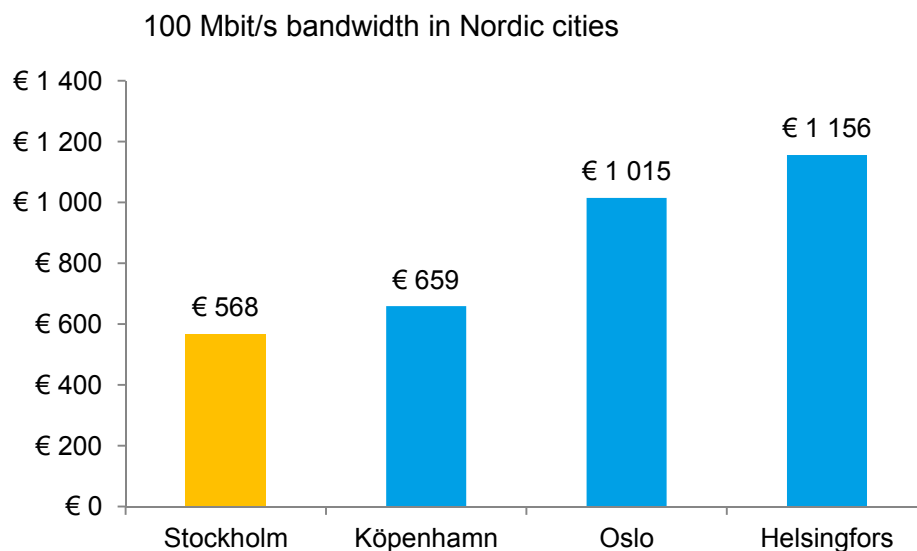


Figure 1 – Average monthly rates for Nordic cities based on connection fee and 36-month fee

A comparison shows that Stockholm and Copenhagen offer low corporate rates for broadband connection from a Nordic perspective. Helsinki, whose two respondents have the highest average monthly rate (SEK 10,566), are nearly twice as expensive as the biggest Nordic cities: Stockholm (SEK 5,195) and Copenhagen (SEK 6,023). Oslo is slightly cheaper (SEK 9,273). Nevertheless, all of these prices are below the mean for the cities compared around the world.

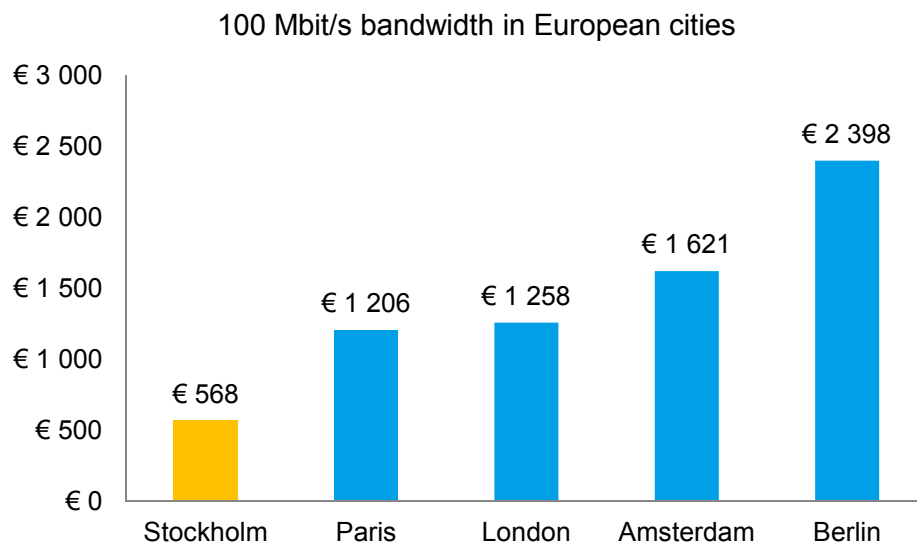


Figure 2 – Average monthly rates for non-Nordic European cities based on connection fee and 36-month fee

London and Paris offer the cheapest corporate broadband rates among non-Nordic European cities. With average monthly corporate rates of just over SEK 11,000 (SEK 11,496 for London and SEK 11,024 for Paris) for 100 Mbit/s bandwidth, they compare favorably to Amsterdam, which is approximately 30 per cent more expensive (SEK 14,814), and Berlin, which is almost 100 per cent more expensive (SEK 21,914). All of the cities compared are more expensive than Stockholm.

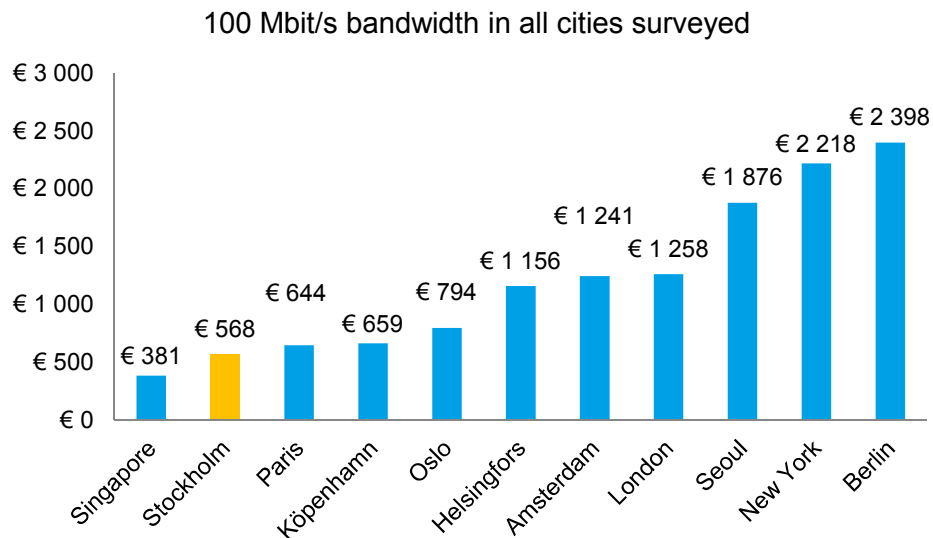


Figure 3 – Average rates for 100 Mbit bandwidth for all cities surveyed

At SEK 3,481 per month, Singapore is the cheapest of all the cities surveyed. Seoul has a monthly rate of SEK 17,148, whereas New York has SEK 20,269.

In addition to a high population density, the low rate in Singapore may be due to the fact that the fiber optic network was financed by a major government subsidy.

Well-developed market in Stockholm

A comparison among all of the surveyed cities indicates that Stockholm has very low rates from an international perspective. Given that the rates of the various actors do not differ significantly, the market appears to be well-developed in relation to other cities.

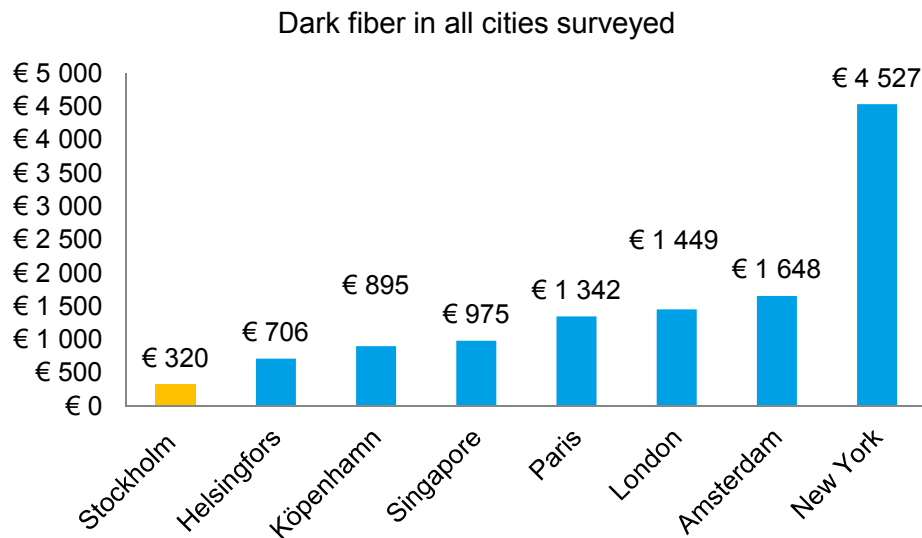


Figure 4 – Average monthly rates for dark fiber based on connection fee and 36-month fee (SEK)

Only a few providers answered the question about whether dark fiber was accessible. One reason is that it is first and foremost the former monopoly in each city or country that has significant IT infrastructure, while competitors usually rent dark fiber from the former monopoly or have dark fiber in only certain areas/stretches. Furthermore, it appears to be even harder to obtain responses about the accessibility and price of dark fiber than of 100 Mbit/s bandwidth.

The responses that were received exhibit largely the same pattern as for 100 Mbit/s bandwidth. At SEK 2,921 per month, Stockholm has the lowest rate. Helsinki has a monthly rate of SEK 6,449 and Copenhagen has SEK 8,184. None of the Oslo providers responded to the question.

Paris has a rate of SEK 12,263, London has SEK 13,247, and Amsterdam has SEK 15,061.

Singapore, which charges the least for 100 Mbit/s bandwidth, has a monthly rate of SEK 8,913 for dark fiber, three times as much as Stockholm. The rate for New York is SEK 41,378, far above the other respondents.

Appendix

Stokab

Stokab is the City of Stockholm's IT infrastructure company. Since the company started in 1994, its goal has been to promote economic growth in the Stockholm region by furnishing a passive, open fiber network. Stokab offers fiber optic connections on equal terms to operators, businesses and public authorities in need of data communications.

www.stokab.se

United Minds

United Minds is an analysis and strategy consultancy consisting of 20 consultants with diverse backgrounds and specialties. United Minds has its head office in Stockholm and a branch in New York.

www.unitedminds.se

100 Mbit/s bandwidth

A connection with a speed of 100 Mbit/s supports the great majority of services. A high-speed connection of this type imposes no limitations and represents no obstacle for most companies. Such a connection allows essentially all cloud services to be used and enables outsourcing to function smoothly from a technical point of view. Access to 100 Mbit/s bandwidth at affordable rates permits businesses to grow and expand.

Dark fiber

Dark fiber is the term for the fiber optic cables required to deliver broadband, telephony, television and other services. Dark fiber is an unrefined connection, i.e., the fiber itself without being connected to electronic equipment. Dark fiber must be supplemented if an operator wants to deliver a service. Access to fiber optic connections is a basic requirement for all electronic communications services.

Access to dark fiber permits an operator to choose the quality and technical specifications that the active equipment will have. Thus, the operator is not dependent on the equipment that another operator (competitor) has chosen for its network.



Results in their entirety

Provider	Non-recurring fee (SEK)	Monthly fee (SEK)	Total monthly rate for 3 years (SEK)
London 1	30 990	7 748	8 608
London 2	0	13 253	13 253
London 3	26 858	11 880	12 626
Berlin 1	42 044	29 239	30 407
Berlin 2	9 359	13 162	13 422
Amsterdam 1	39 987	10 877	11 987
Amsterdam 2	17 366	14 578	15 061
Amsterdam 3	34 275	16 443	17 395
Copenhagen 1	6 100	4 679	4 848
Copenhagen 2	0	6 610	6 610
Copenhagen 3	793	6 588	6 610
Oslo 1	5 310	10 030	10 178
Oslo 2	23 600	6 962	7 618
Oslo 3	0	10 024	10 024
Helsinki 1	14 715	4 936	5 344
Helsinki 2	8 957	15 538	15 787
New York 1	0	10 065	10 065
New York 2	0	25 874	26 874
New York 3	0	23 867	23 867
Paris 1	3 656	10 922	11 024
Seoul 1	13 420	16 775	17 148
Singapore 1	1 692	1 570	1 617
Singapore 2	2 667	5 270	5 344
Stockholm 1		5 200	5 200
Stockholm 2	20 000	3 995	4 551
Stockholm 3		5 590	5 590
Stockholm 4	20 000	5 300	5 856
Stockholm 5	11 500	6 500	6 819
Stockholm 6	5 000	4 900	5 039
Stockholm 7	4 000	4 500	4 611
Stockholm 8	7 000	3 700	3 894

Operators questioned in the survey:

Above net GB, Alice DE, AT&T US, Bahnhof SE, Bell US, Bredbandsbolaget SE, Bredbåndsservice NO, British Telecom GB, Canal Digital NO, Colt DE, Completel FR, ComX DK, Dansk Bredband DK, Deutsche Telekom DE, DGC SE, Elisa SF, Fibrespan GB, France Telecom / Orange FR, Free FR, Geo Networks GB, Globetel SF, Hafslund Telecom NO, InterNL NL, ION US, IP Visie NL, IP-Only SE, Kable Deutschland DE, KDDI KOR, KPN NL, LGA SG, Lighttower US, Lynet NO, Network US, NTT KOR, Numerique FR, O2/Cesky CZ, Ownit SE, Pronea NO, Singtel SG, Softbank KOR, Starhub SG, Superinternet SG, TDC DK, TDC SE, Tele2 SE, Telecom (Alice/Tele2) NL, Telecom/telefonica CZ, Telenor DK, Telenor NO, Telenor SE, TeliaSonera SE, TeliaSonera SF, UPC CZ, UPC NL, Verizon US, WIN/VIA CZ, Zeeker Telecom NL.

Table 1

Exchange rate coefficients	
EUR 1	SEK 9,14
DKK 1	SEK 1,22
SGD 1	SEK 5,27
GBP 1	SEK 10,33
CZK 1	SEK 0,38
USD 1	SEK 6,71
NOK 1	SEK 1,18

Table 1 – Exchange rate coefficients used when converting rates offered to Swedish kronor