

The Swedish Telecommunications Market 2008



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Foreword

The Swedish Telecommunications Market, our summary of operator statistics, seldom provides any great surprises. Still, each year I find a few new tendencies or a few unexpected breaks in trends. The most interesting part is seeing the statistics from a long-term perspective. This provides a picture of how much has actually happened in the market.

Five years ago, fixed telephony represented an overwhelming proportion of the voice traffic in the networks. During the last four years, the proportion of voice traffic in mobile networks has risen at an increasing rate, while the number of fixed traffic minutes has reduced. I believe that I can dare to promise that in a year there will be as many traffic minutes in mobile networks as in fixed networks.

A common feature for the new services that have emerged and been most successful during recent years is that they are based on existing solutions. A large step was taken when the traditional copper network became a broadband network. Thereafter, the IP-based networks became the bearer of voice telephony and television services and, with the impact of 'turbo 3G', mobile networks also became broadband networks.

Developments show that there are two consumer needs that currently power the development of services – needs for high capacity and mobility. Swedes are choosing broadband with high capacity to an increasingly great extent, not least owing to the fact that services such as IPTV impose great demands on the networks. At the same time, the strong development of mobile broadband shows that we also wish to have access to services outside the home.

This year's report contains an area of focus which illustrates this development well, namely 'cloud services' or cloud computing. When we place our programs and our information on the Internet instead of our computer, we can gain access to the information regardless of our location. We can use smaller terminals, for example small laptop computers, since computer capacity becomes less important. However, demands on the capacity of the networks increase at the same time as security and privacy – how our information is dealt with – becomes more important. The mobile society has been spoken of for a long time as a vision. I wish to state that in many aspects we are already there.

For the Swedish Post and Telecom Agency (PTS), the development I have described above represents new challenges. Capacity and mobility require investments in networks, both mobile and fixed. As the regulatory authority, we have the important task of creating the preconditions for effective investments and sustainable competition. With clear game rules, the market stakeholders can devote resources to offering new and improved services so

that in five years we will be able to look back on a period that is as revolutionary as the one I have surveyed here.

Marianne Treschow
Director-General

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Market shares are published interactively on the PTS
statistics portal:

www.svensktelemarknad.se

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Abstract

The retail market for electronic communications reduced during 2008 by 1 per cent, measured in revenues for mobile call and data services, fixed telephony, Internet services and data communications, and total revenues for the year amounted to SEK 49.5bn. Revenues for mobile call and data services increased by 4 per cent to 20.5bn, Internet services increased by 3 per cent to 8.6bn, data communications services reduced by 1 per cent to 4.0bn and fixed call services reduced by 9 per cent to 16.4bn. It is primarily revenues from undertakings that are decreasing. An average household generated 566 kronor per month in revenues for market stakeholders during 2008, which was 4 kronor more than during 2007.

The proportion of voice traffic minutes in mobile networks increased to 41.4 per cent of the total number of voice traffic minutes in 2008. The corresponding proportion in 2007 was 34.9 per cent. Traffic for mobile data services amounted to 13 720 Tbytes, which corresponds to an increase of 526 per cent compared with 2007.

On 31 December 2008 there were 5 323 000 fixed telephone subscriptions in Sweden, which is 3 per cent less than at the corresponding time in 2007. TeliaSonera's PSTN subscriptions continued to decline and, for the first time, the alternative operators' 'WLR' (Wholesale Line Rental) subscriptions via PSTN also declined. However, the number of subscriptions for IP-based telephony increased by 18 per cent to 735 000 subscriptions. The number of pre-selection customers decreased by 34 per cent to 337 000.

During 2008, the number of contract subscriptions and active pre-paid cards for mobile call and data services increased by 9 per cent to 10 988 000. The proportion of contract subscriptions increased at the expense of the proportion of pre-paid cards, which decreased. The number of subscriptions for mobile packet data (mobile broadband) only was 877 000 at the end of 2008, corresponding to an increase of 133 per cent compared with one year earlier.

The number of active customers with broadband increased by 20 per cent to 3 782 000 during 2008, and subscriptions for mobile packet data alone represented 80 per cent of the total increase. The number of subscriptions via fibre or fibre LAN increased by 16 per cent to 590 000. The proportion of households having a subscription with a fixed broadband connection also increased during the year, from 58 to 60 per cent. At the same time, the proportion of the population having a subscription with a mobile broadband connection to the Internet increased, from 2 to 6 per cent.

The total number of television subscriptions increased by 7 per cent to 4 945 000 during 2008, an increase that primarily relates to subscriptions for digital television via cable television networks.

Telematics, that is machine-to-machine communications (M2M), via mobile networks is an area of growth within the area of electronic communications that has a number of areas of application, such as automatic reading of electricity supply meters, positioning and monitoring. Growth in the telematics area is primarily powered by the possibility of reducing production and operating costs. Telematic solutions may for instance mean that various kinds of control functions and services will only need to be performed when necessary, rather than on an ongoing basis. The sales of telematic services in Sweden are still low compared with other sub-areas in the market, but the potential for future growth is good – not least as telematic services do not normally impose particularly great demands on capacity compared with, for instance, mobile broadband. In this way the operators can increase their revenues by using existing networks for new applications of telematic solutions.

The substantial increase in the number of subscriptions for mobile broadband and the volumes of mobile packet data transmitted per user can be linked to the trend towards increasing numbers of functions being offered as Internet-based services – functions that previously were dependent upon locally installed platforms or applications. For private individuals, this may involve an opportunity to store pictures, music, film clips, documents and other material on the Internet with the aim of being able to access these files from any Internet connection terminal whatsoever. However, increased capacity requirements will probably demand investments in mobile networks that in their turn will be financed by revenues from end-customers. However, today the revenues from mobile broadband are low in relation to the amount of traffic generated by the service, which means that new business models will probably be introduced to enable the operators to meet forthcoming investment requirements. It is conceivable that these business models will partly comprise new types of price plans where certain traffic is in one or more ways given priority over other traffic. This may in its turn raise issues concerning network neutrality and have consequences for the population in areas that can only receive broadband via mobile networks.

In January 2008, the supervisory authorities in the area of telecommunications of the respective EU States confirmed that all EU States have implemented the Commission Regulation governing prices for international roaming. One year after the introduction of these regulations, the average price for outgoing calls generated by Swedish travellers within the EU reduced by a third, and the price for text messaging (SMS) by just less than one-fourth. It is expected that there will be regulations in the future regarding, among other things, SMS and mobile data traffic.

Key data	2008	2007	Change
<i>Fixed call services</i>			
Subscriptions for fixed telephony (thousands)	5 323	5 506	-3%
of which via WLR (thousands)	1 004	1 023	-2%
Private	820	873	-6%
Business	184	150	23%
of which via IP-telephony (thousands)	735	623	18%
Private	705	588	20%
Business	30	34	-12%
Pre-selection customers (thousands)	337	513	-34%
Private	207	337	-39%
Business	130	176	-26%
Revenues from fixed call services (SEKm)	16 546	18 221	-9%
Private	10 688	11 852	-10%
Business	5 859	6 369	-8%
<i>Mobile call services and mobile data</i>			
Mobile subscriptions (thousands)	10 988	10 117	9%
Private	8 662	8 068	7%
Business	2 326	2 049	14%
of which active UMTS subscriptions	3 550	2 258	57%
of which subscriptions for only mobile packet data	877	376	133%
Number of SMS sent (millions)	7 480	4 826	55%
Number of MMS sent (millions)	139	103	36%
Traffic for mobile data services (Tbyte)	13 720	2 191	526%
Revenues from mobile subscriptions, SMS, MMS and mobile data traffic (SEKm)	20 497	19 726	4%
Private	12 962	11 878	9%
Business	7 535	7 848	-4%
<i>Data communications services</i>			
Revenues from data communications services to end-users (SEKm)	4 006	4 030	-1%
Frame	56	124	-55%
IP-VPN	2 220	2 212	0%
Leased lines	1 396	1 352	3%
Dark fibre and other raw network capacity	334	342	-2%
<i>Internet services</i>			
Internet subscriptions (thousands)	4 273	3 958	8%
Dial-up subscriptions	490	802	-39%
Broadband subscriptions	2 905	2 780	4%
Mobile broadband subscriptions	877	376	133%
Revenues from fixed Internet subscriptions (SEKm)	8 588	8 337	3%
Private	6 891	6 649	4%
Business	1 697	1 688	1%

1 Aim and method

The purpose of 'The Swedish Telecommunications Market 2008' is to survey the development of a large part of the Swedish market for electronic communications.

The task of the Swedish Post and Telecom Agency (PTS) is, first, to monitor the development of the market for electronic communications, second, to promote competition within the sector. As part of these tasks, PTS works with market statistics and market analyses. It is also important that the public, operators and other undertakings and organisations gain access to statistics and market analyses, a factor which provides a further incentive for PTS to publish market statistics.

This report focuses on the following sub-markets:

- Fixed call services, including IP-based telephony.
- Mobile call services and data services.
- Internet services.
- Data communications services.
- Television services.

This report 'The Swedish Telecommunications Market' should primarily be viewed as PTS's report on electronic communications market statistics, and we therefore focus on reporting market statistics. The report is also available as a half-year version, but the full-year version of the Swedish Telecommunications Market contains in addition a number of more advanced sections that focus on developments within a few areas of relevance for the market. Both the parts that describe the market and the more advanced sections contain a number of figures and diagrams clarifying the numerical material.

The gathering of full-year statistics for the years 2000 to 2008 has been undertaken in collaboration with the Swedish Institute for Transport and Communications Analysis (SIKA)¹ and Statistics Sweden (SCB). However, PTS attends to the gathering of half-year statistics internally. An important reason for this collaboration with SIKA and SCB is to make matters easier for information providers as, among other things, this collaboration reduces the

¹ SIKA is the authority (reporting to the Ministry of Enterprise, Energy and Communications) that is responsible for the official statistics on telecommunications operations (see www.sika-institute.se).

number of questionnaires distributed. The statistics for the full-year 2008 have been gathered by use of a web-based questionnaire.²

PTS has access to various details considered to be commercially sensitive according to the Secrecy Act.³ Such information has for instance been requested from notified operators in the course of compliance work, but is not published in this report. The details that have been requested from notified operators for the gathering of statistics for 'The Swedish Telecommunications Market 2008' are exclusively used as a basis for:

1. Statistics contained in the report 'The Swedish Telecommunications Market first half-year 2008' (PTS).
2. Statistics contained in a public statistics portal.⁴
3. PTS's market analyses and decisions concerning significant market power (SMP).⁵
4. Any PTS decisions concerning universal services.⁶
5. PTS's other operations as a supervisory authority.⁷
6. The official statistics on telecommunications operations in Sweden, the report *Televerksamhet 2008* (Telecom Operations 2008) (SIKA).

This report is primarily based on the following sources of information:

- Quantitative data collected by PTS from operators.
- Telephone interviews with operators.
- Compilations of statistics from previous reports corresponding to the Swedish Telecommunications Market.
- Other analyses conducted by PTS internally.
- Other public sources.

It is specifically stated in the questionnaire circulated to operators which information will be used for each area. A duty to reply was introduced in conjunction with the gathering of information for the year 2003, which also

² The web questionnaire was prepared in collaboration with Unified Dialogs AB, and the information gathering was conducted by Unified Dialogs AB.

³ Chapter 8, Section 6 of the Secrecy Act.

⁴ www.svensktelemarknad.se

⁵ The Electronic Communications Act (2003:389) (LEK), Chapter 8, Sections 5 to 7.

⁶ The Electronic Communications Act (2003:389) (LEK), Chapter 5.

⁷ The material may only be used for these purposes after PTS has informed the operators concerned.

applies to the gathering of half-year information. For details of those operators that submitted answers, see the chapter ‘Schedule of participants’.

The statistics presented in the Swedish Telecommunications Market, which are based primarily on the data received from operators, should be viewed as PTS’s assessment of the market, even if other public sources have also been used to a certain extent. In total, the questionnaire was sent out to 532 stakeholders. At the time the report was published, 491 had responded, corresponding to approximately 92 per cent of those asked.

There are of course measurement errors during the gathering process, as there are operators in the market that do not respond to the questionnaire. However, the operators that have responded represent a significant proportion of sales in the market for electronic communications, and consequently the measurement error should not be particularly large. PTS considers that information on revenues that has been received for 2007 corresponds to a proportion of at least 99 per cent of the retail revenues in the market for fixed call services,⁸ mobile call services and mobile Internet and also for television services. For Internet services, the corresponding proportion is at least 90 per cent.⁹ Measurement error may also arise if those asked have not answered all of the questions in the questionnaire, if the responses were misleading owing to carelessness, inadequate or misunderstood instructions or if it was not possible to derive any exact value from the company’s accounting. Such attrition and possible inadequacies in the responses received may often be compensated through proceeding on the basis of data collected previously or by making estimates based on related responses in the questionnaire.

Historical statistics are continuously updated whenever further information becomes available to PTS, and for this reason statistics for one and the same period may differ in the various editions of the report. It is therefore important that those using the Swedish Telecommunications Market have access to the version published most recently. The most recently updated database is always available on the PTS web-based statistics portal (www.svensktelemarknad.se).

Market development is reported by statistics, which in some cases stretch back to 1992. As of and including ‘The Swedish Telecommunications Market 2006’,

⁸ Does not include revenues from dial-up Internet and directory enquiry services.

⁹ However, the answers that have been received about the number of customers are considered to correspond to more than 97 per cent of the market value. In other words, some operators have answered the question about the number of customers but not the question about sales. The estimates that have been made have to a large extent been based on previous answers and on answers about the number of customers. PTS considers that the sales for the Internet stated in this report lie at a credible level. PTS is also waiting for supplementary answers regarding the operators’ sales.

PTS also publishes market shares for the retail market for each period that information was gathered, though no historical market shares that are older than the full-year 2006. Market shares for a number of different units are contained in this report, but PTS publishes considerably more details on market shares on the web-based statistics portal. This portal includes market shares for all the retail market variables as of and including the full-year 2006, except as regards the market for television services.¹⁰ In those cases where variables are considered to be inadequate or misleading in some other way, these are not published in the statistics portal.

In the questionnaire, definitions have been used, which also form the basis of the reports. These definitions are revised and clarified continuously so that they are in phase with developments in the market. Segmentation of individual sub-markets may also change from year to year. Since the questionnaire for 2003, regard is also taken to PTS's need of information for conducting market analyses and making decisions concerning whether any operator has significant market power. The information can to a large extent still be compared with previous reports despite these changes.

As regards the sub-market 'Internet services', it is common to mix up expressions such as fixed connection, broadband connection, wireless connection, mobile connection, broadband and others since there is no common definition. However, in 'The Swedish Telecommunications Market' the terms are defined as illustrated in Table 1.¹¹

¹⁰ However, PTS does not exclude the possibility of variables in the retail market for television services being in the future published in a similar way as the variables for the other retail markets.

¹¹ PTS may, however, define the terms differently in other contexts.

Table 1 Types of Internet connection

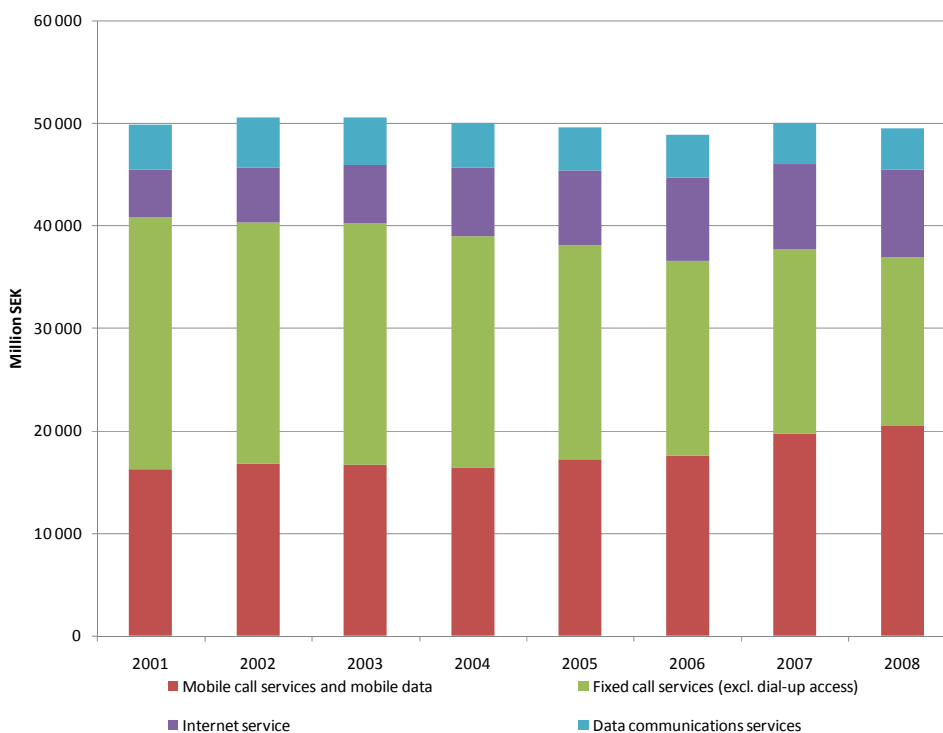
	Dial-up connection	Fixed connection	Wireless connection	Broadband connection	Wireless connection	Mobile connection
Dial-up connection	PSTN, ISDN, GPRS					
Fixed connection	PSTN, ISDN	PSTN, ISDN, FWA, Satellite, xDSL, Cable, Fibre and fibre LAN, Other broadband connection				
Wireless connection	GPRS	FWA, Satellite	FWA, Satellite, HSPA, CDMA 2000, GPRS, UMTS, EDGE			
Broadband connection	-	FWA, Satellite, xDSL, Cable, Fibre and fibre LAN, Other broadband connection	FWA, Satellite, HSPA, CDMA 2000	FWA, xDSL, Satellite, Cable, Fibre and fibre LAN, Other broadband connection, HSPA, CDMA 2000		
Wired connection	PSTN, ISDN	PSTN, ISDN, xDSL, Cable, Fibre and fibre LAN, Other broadband connection	-	xDSL, Cable, Fibre and fibre LAN, Other broadband connection	PSTN, ISDN, xDSL, Cable, Fibre and fibre LAN, Other broadband connection	
Mobile connection	GPRS	-	HSPA, CDMA 2000, GPRS, UMTS, EDGE	HSPA, CDMA 2000	-	HSPA, CDMA 2000, GPRS, EDGE, UMTS

In numerous cases statistics are reported broken down into private customers and business customers respectively. The definitions of ‘private customer’ and ‘business customer’ are based on who pays for the service, not who the user is. The criterion for the paying party to be designated as a business customer (including those organisations that are not businesses) is that it has a company/organisation identity (ID) number. The others are designated as private customers, which means that businesses and organisations registered with personal identity (ID) numbers are included in the category ‘private customers’.

Owing to rounding, the information contained in this report is expressed as per cent, and consequently the total of the parts does not always amount to 100 per cent.

2 Market development 2008 - private and business

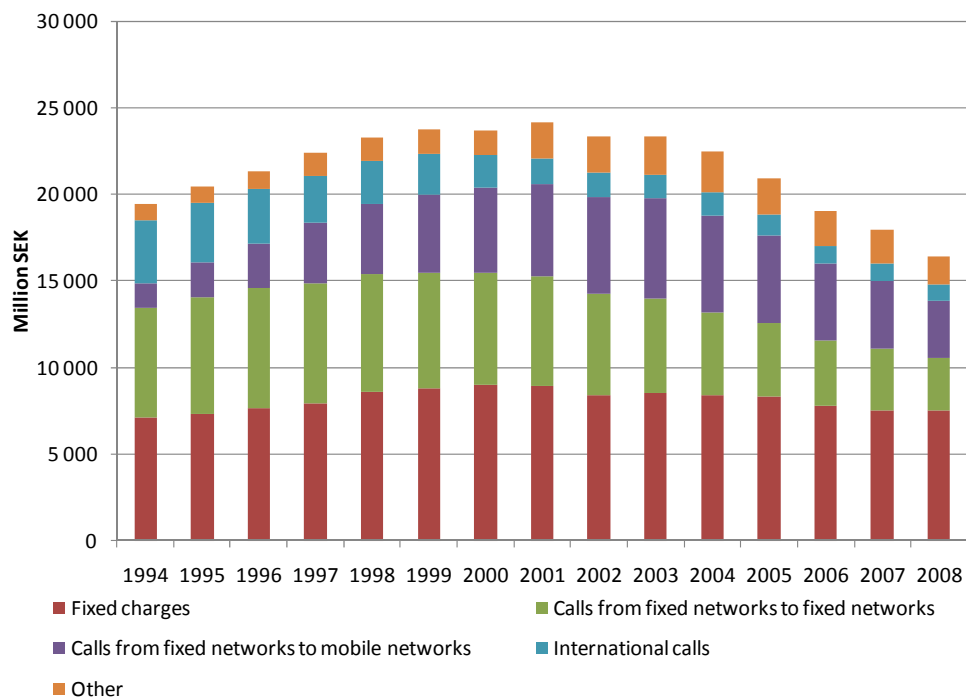
Diagram 1 Revenues on the market of electronic communications



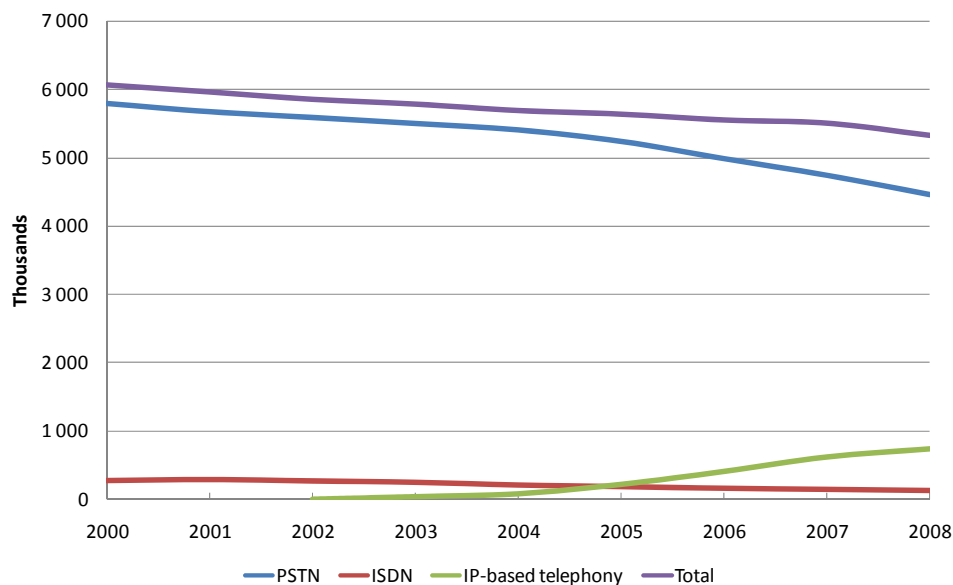
- The retail market for electronic communications reduced during 2008 by 1 per cent and total revenues for the year amounted to SEK 49.5bn.
- Revenues for mobile call and data services (including SMS and MMS) increased by 4 per cent to 20.5bn.
- Internet services increased by 3 per cent to 8.6bn.
- Data communications services reduced by 1 per cent to 4.0bn.
- Fixed call services reduced by 9 per cent to 16.4bn.
- It is primarily revenues from undertakings that are decreasing. An average household generated 566 kronor per month in revenues for market stakeholders during 2008, which was 4 kronor more than during 2007.

2.1 Fixed call services

Diagram 2 Revenues from fixed telephony end users

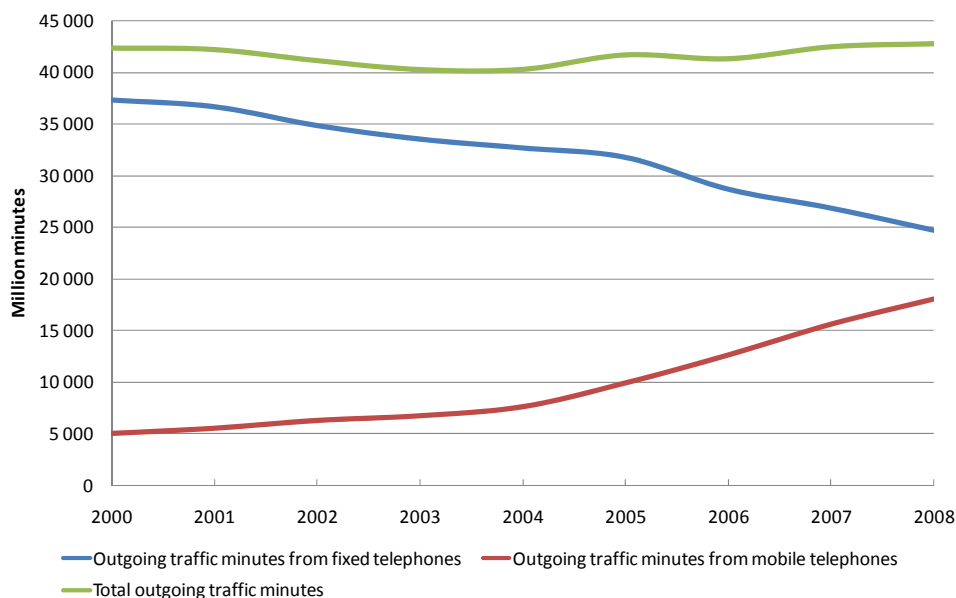


- The annual revenue for fixed call services (excluding dial-up access to the Internet) sank by 9 per cent, from SEK 18.2bn to SEK 16.4bn during 2008 compared with the previous year. Reduction of revenues from calls to fixed networks is the largest, followed by the reduction of revenues from calls to mobile networks. At the same time as revenues from fixed charges continue to reduce, they comprise an increasingly large proportion of the total revenues for fixed call services. The proportion has increased each year since 2004, and comprised 46 per cent in 2008.

Diagram 3 Number of fixed telephony subscriptions

- On 31 December 2008 there were 5.3 million fixed telephone subscriptions in Sweden, which can be compared to 5.5 million one year earlier. One trend that is clear is that the number of PSTN and ISDN subscriptions are decreasing at the same time as the number of subscriptions for IP-based telephony are increasing. Between the end of 2007 and the end of 2008, the number of IP-based subscriptions increased by around 18 per cent, from 603 000 to 735 000. During the same period, the number of PSTN-based subscriptions reduced by about 6 per cent, from 4.7 million to 4.5 million.

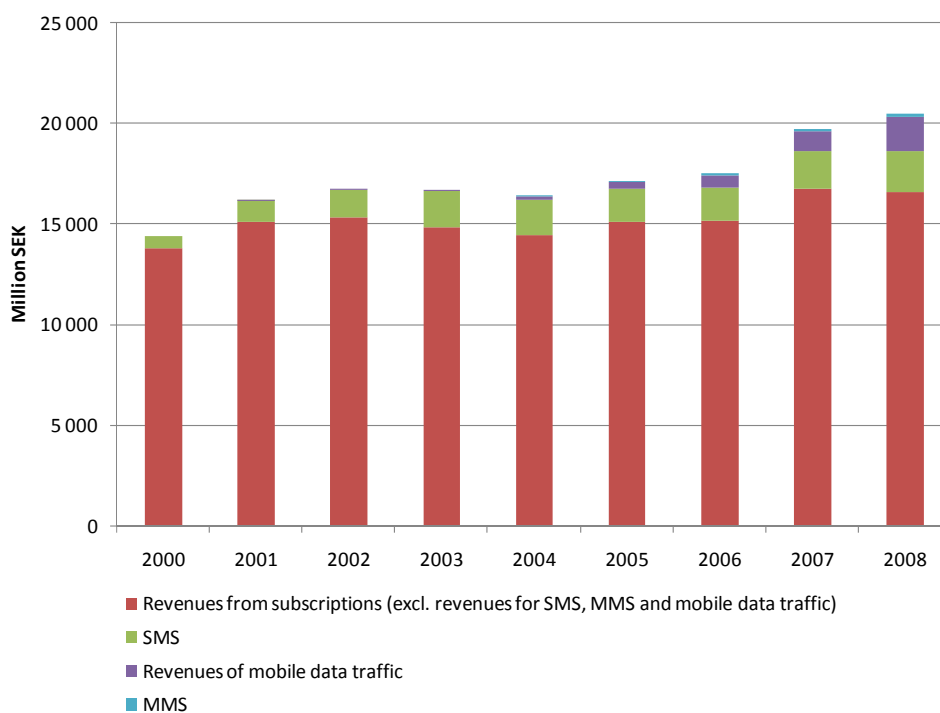
Diagram 4 Outgoing traffic minutes from fixed telephones and mobile telephones



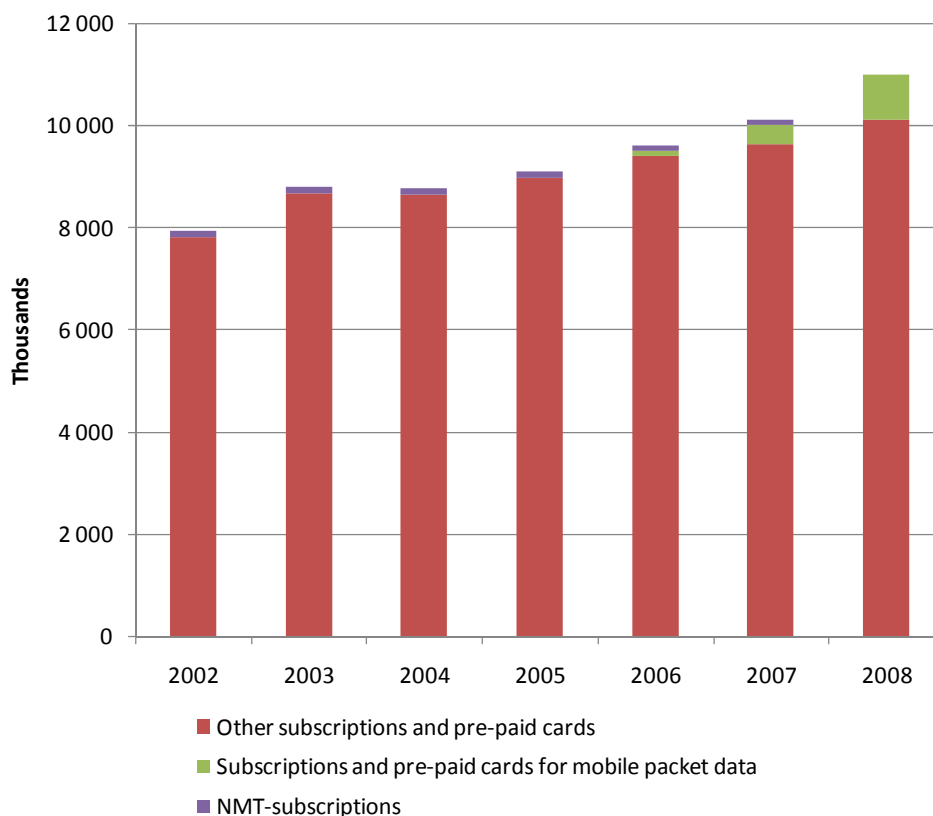
- The number of outgoing traffic minutes for fixed call services decreased from 26.8 billion during 2007 to 24.7 billion during 2008. The number of outgoing call minutes in mobile networks continued to approach the number in fixed networks and corresponded to 73 per cent of the outgoing minutes in fixed networks in 2008. The corresponding proportion in 2007 was 58 per cent.
- Overall, the total number of outgoing traffic minutes for call services increased by one-half per cent, from 42.5 to 42.8 billion minutes.

2.2 Mobile call services and mobile data

Diagram 5 Revenues from subscriptions and active pre-paid cards for mobile call services and mobile data



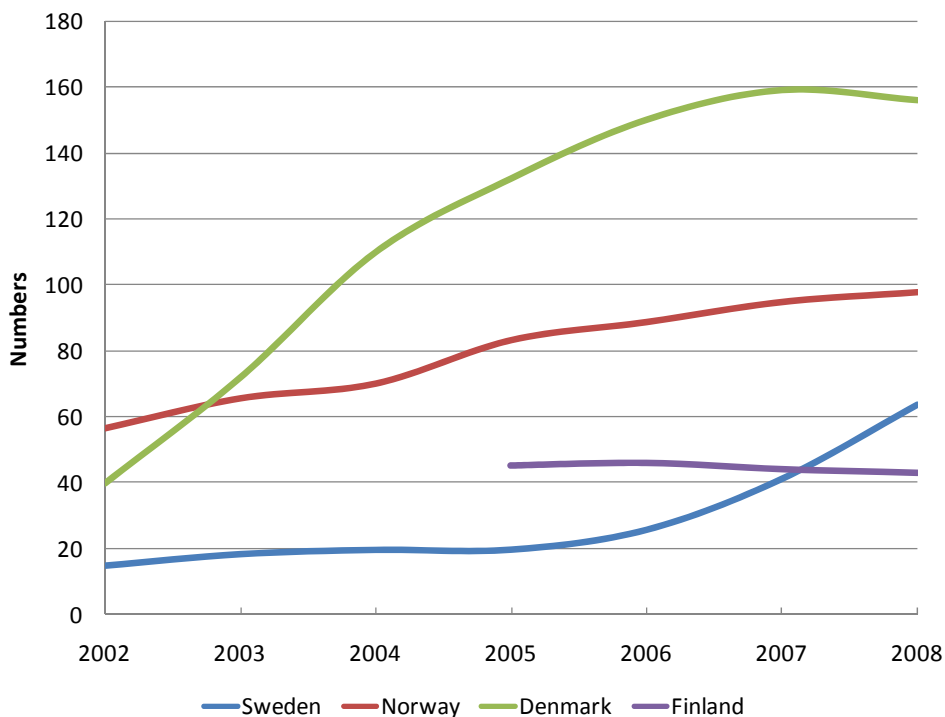
- During 2008 revenues for mobile call services and data services rose by 4 per cent, from SEK 19.7bn to SEK 20.5bn. Revenues for SMS rose by 7 per cent from SEK 1.9bn to SEK 2.0bn, and revenues for mobile data traffic increased by 76 per cent, from SEK 1.0bn to SEK 1.7bn.
- Revenues for mobile data traffic are thus approaching SMS revenues but are, in contrast, linked to significantly higher costs for the operators.
- MMS still comprise a small part of the total revenues, but they increased by 30 per cent, from SEK 109m to SEK 142m.

Diagram 6 All subscriptions and active pre-paid cards for mobile call services and mobile data

- The number of subscriptions for mobile call services and mobile data continued to grow. Between 31 December 2007 and 31 December 2008, the number of subscriptions and active pre-paid cards increased from 10.1 million to almost 11 million - despite the fact that 107 000 NMT subscriptions disappeared at the beginning of the year and in conjunction with TeliaSonera discontinuing its operation in the analogue NMT network. Contract subscriptions increased by 1 057 000 and active pre-paid cards reduced by 79 000. Contract subscriptions for mobile broadband represent the greatest increase.
- The number of subscriptions and active pre-paid cards for only mobile packet data (mobile broadband) increased from about 376 000 in at the end of 2007 to about 877 000 at the end of 2008. This change corresponds to an annual growth of 133 per cent. The number of private subscriptions and pre-paid cards increased by 159 per cent and the number of business subscriptions by 94 per cent.

- Traffic for mobile data services increased from 2 191 Tbytes during 2007 to 13 720 Tbytes during 2008, which corresponds to an annual growth of 526 per cent. An average user of a subscription for only mobile packet data sent or received on average 1.8 Gbytes per month during 2008.¹² This is more than twice as much traffic per user and month as during 2007.
- The total number of outgoing call minutes from mobile telephones increased from 15.6 billion to 18.1 billion minutes between 2007 and 2008. This increase means that the number of outgoing call minutes from a mobile telephone for an average mobile user increased by about 17 minutes per month during the period - from about 135 minutes per month to about 152 minutes per month.

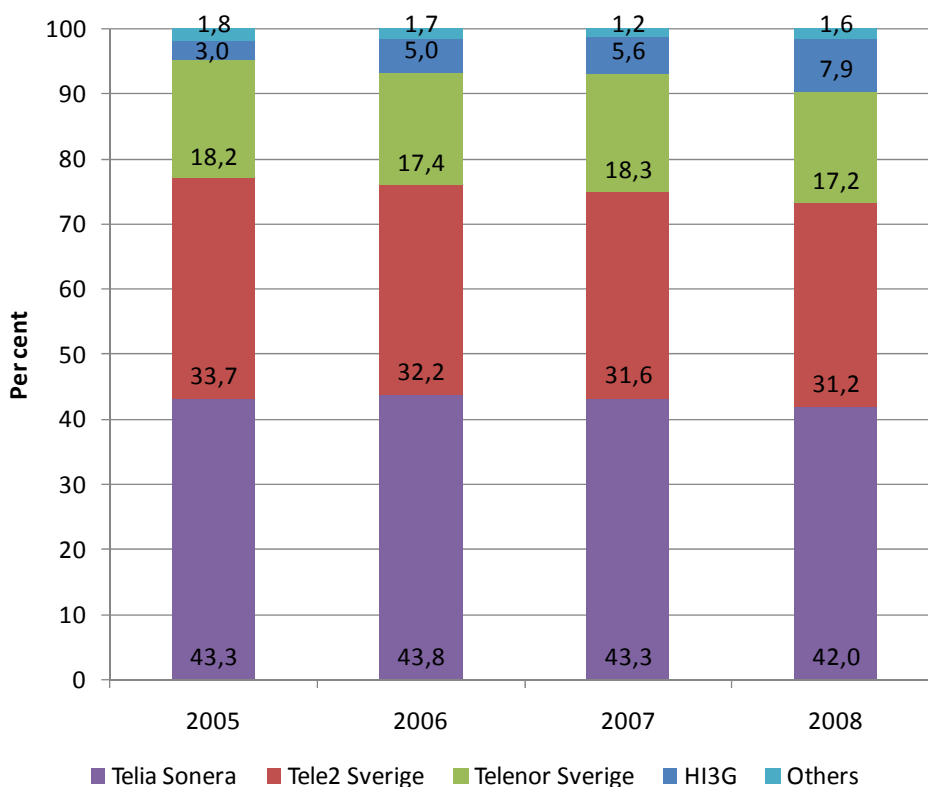
Diagram 7 Average number of SMS sent per GSM/UMTS/CDMA 2000 customer and month



¹² Subscriptions that handle both mobile packet data and calls also generate mobile packet data. However, PTS has received indications that this share is very small compared to that generated by subscriptions for mobile packet data only.

- During the 2008, around 7.7 billion SMS were sent from mobile telephones, which corresponds to an annual increase of about 59 per cent. The growth for the number of SMS sent per subscription and month is rapid in relation to our neighbouring Nordic countries. An average customer sent just less than 64 SMS per month during 2008, which is an increase of 53 per cent compared with 2007.
- The number of MMS increased from 103 million during 2007 to 140 million during 2008. On average, just over 1 MMS per customer and month was sent, which corresponds to an annual increase of about 33 per cent.

Diagram 8 Market shares – all subscriptions and active pre-paid cards for mobile call services and mobile data



- Market shares¹³ for the major network-owning operators TeliaSonera, Tele2 HI3G and Telenor changed marginally during 2008 compared with 2007. However, HI3G has increased from 5.6 to 7.9 per cent of the subscriptions – primarily owing to a relatively large proportion of subscriptions for mobile broadband. Telenor, TeliaSonera and Tele2 are reducing their respective market shares. Market shares for all stakeholders asked are available on www.svensktelemarknad.se.

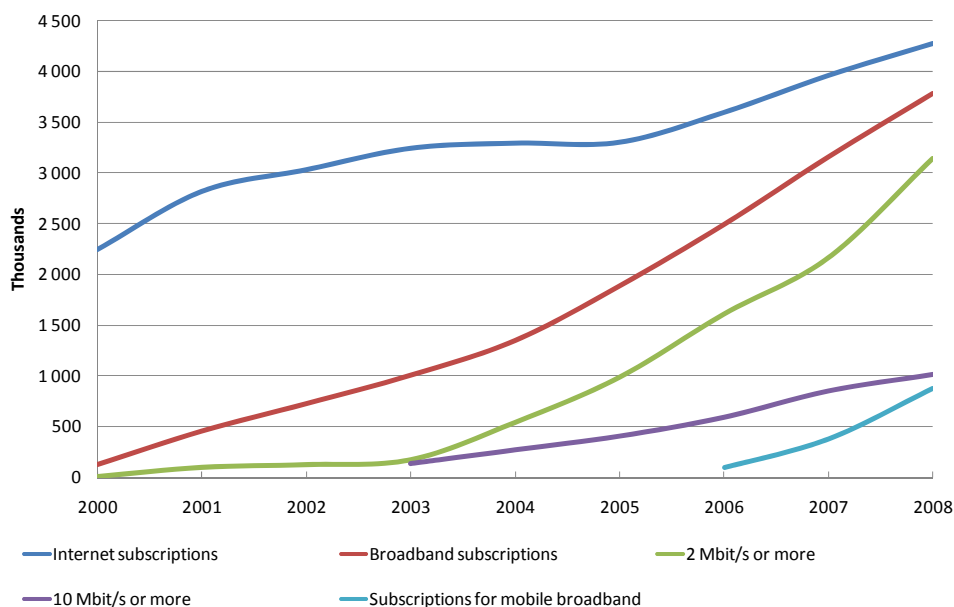
2.3 Internet services

Diagram 9 Total and average revenues for Internet subscriptions¹⁴

- Sales in the market for Internet access rose from SEK 8.3bn to SEK 8.6bn during 2008, which corresponds to an annual growth of 3 per cent. The revenues for subscriptions for fixed broadband connections to the Internet rose by nearly 5 per cent, from SEK 7.9bn to SEK 8.4bn in 2008. During the same period, the revenues from dial-up connections reduced by 49 per cent, from SEK 389m to SEK 197m.
- It is the increase in the number of subscriptions for fixed broadband that is causing these revenues to increase. The average revenue per fixed broadband subscription and month from private customers in fact reduced during 2008, from 218 to 212 kronor. During the same period, the average revenue per fixed broadband subscription and month from businesses reduced from 742 to 693 kronor. The average revenue from businesses has reduced considerably during the entire 2000s (see Diagram 9).

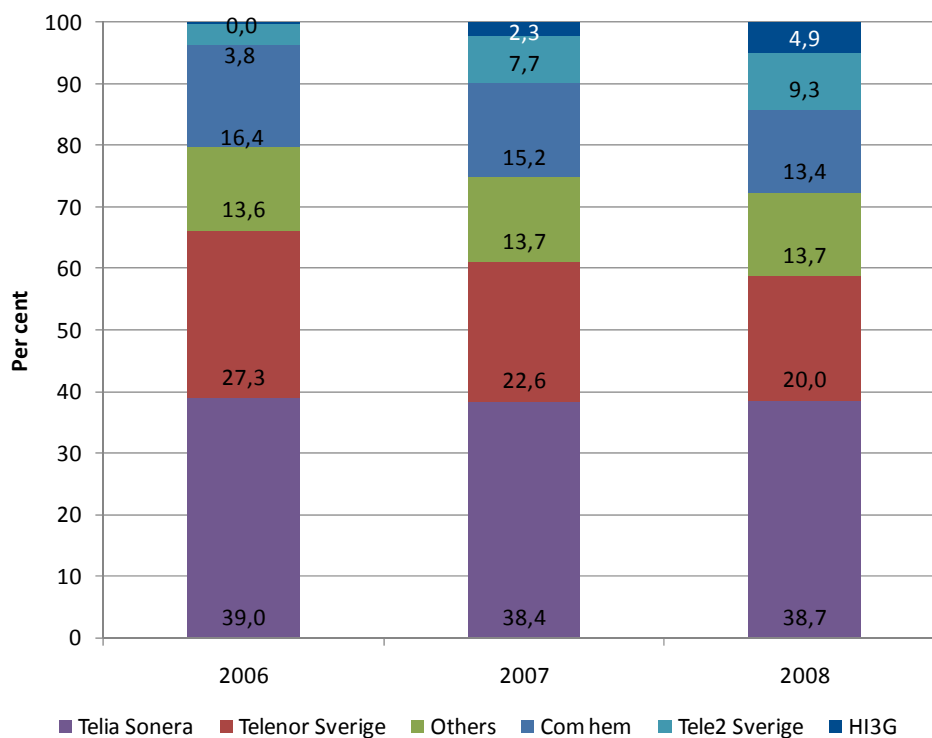
¹³ Mobile broadband is included in both **Fel! Hittar inte referenskölla.Fel! Hittar inte referenskölla.**, which shows the share of subscriptions and active pre-paid cards for mobile call services and mobile data, and in **Fel! Hittar inte referenskölla.**, which shows the share of broadband subscriptions. In these Diagrams, the market shares for service providers that are partly owned by at least 50 per cent by a network operator have been added to the network operator's market share.

¹⁴ Revenues from subscriptions for mobile broadband are not included. They are reported instead under the area mobile call services and data services.

Diagram 10 Number of Internet subscriptions

- The market for Internet access has for a number of years undergone great changes in conjunction with the transition from dial-up connection to broadband connection. The breakthrough for mobile broadband has meant that this sub-market is once again facing great changes.
- The number of active customers with broadband increased from around 3 156 000 to 3 782 000 between 31 December 2007 and 31 December 2008, corresponding to growth of approximately 20 per cent. Mobile broadband represented 80 per cent of this increase, Fibre and fibre LAN represented 13 per cent of the increase and other access technologies represented 7 per cent. Subscriptions for dial-up Internet reduced during the same period by 39 per cent, from around 802 000 to around 490 000 subscriptions.
- The proportion of broadband subscriptions with a transmission rate of 2 Mbits per second or more of all customers with broadband was 83 per cent at the end of 2008. The corresponding proportion one year earlier was 69 per cent.

Diagram 11 Market shares – broadband subscriptions¹⁵



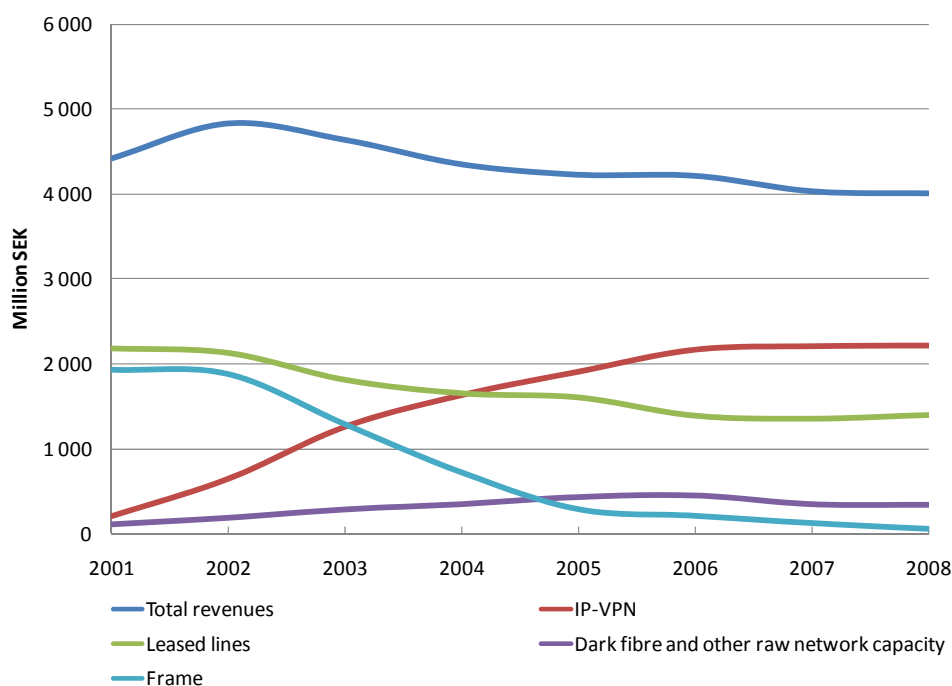
- The rapid growth of mobile broadband means that the market shares for broadband subscriptions are increasing for the mobile operators HI3G, Tele2 Sverige and TeliaSonera at the same time as they are reducing for Com hem and Telenor Sverige.¹⁶
- The group ‘other’ is comprised to a large extent of service providers active in urban networks, who have overall an unchanged market share due to the strong growth of broadband subscriptions via fibre and fibre LAN. Market shares for all stakeholders asked are available on www.svensktelemarknad.se.

¹⁵ Mobile broadband is included in both Diagram 8, which shows the share of subscriptions and active pre-paid cards for mobile call services and mobile data, and in Diagram 11, which shows the share of broadband subscriptions.

¹⁶ In this Diagram, the market shares for Glocalnet, Spray and B2 Broadband have been added to Telenor Sweden, and the market share for Visit has been added to Com hem.

2.4 Data communications services to end user

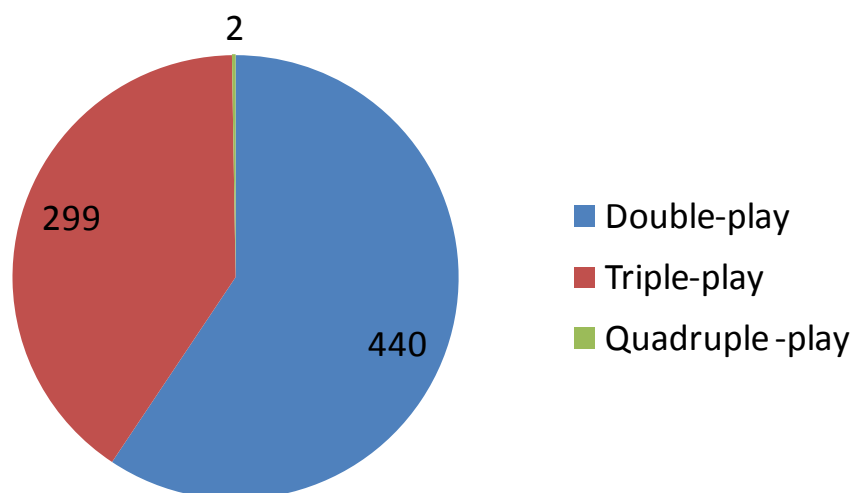
Diagram 12 Revenues for data communications services to end user



- Sales in the market for data communications services to end user has reduced by 1 per cent during 2008, to SEK 4.0bn. Revenues from IP-VPN and leased lines changed marginally, but remain at SEK 2.2bn and SEK 1.4bn respectively. Revenues from dark fibre and other raw network capacity have reduced by 2 per cent from around SEK 342m to around SEK 334m.

2.5 Bundled subscriptions

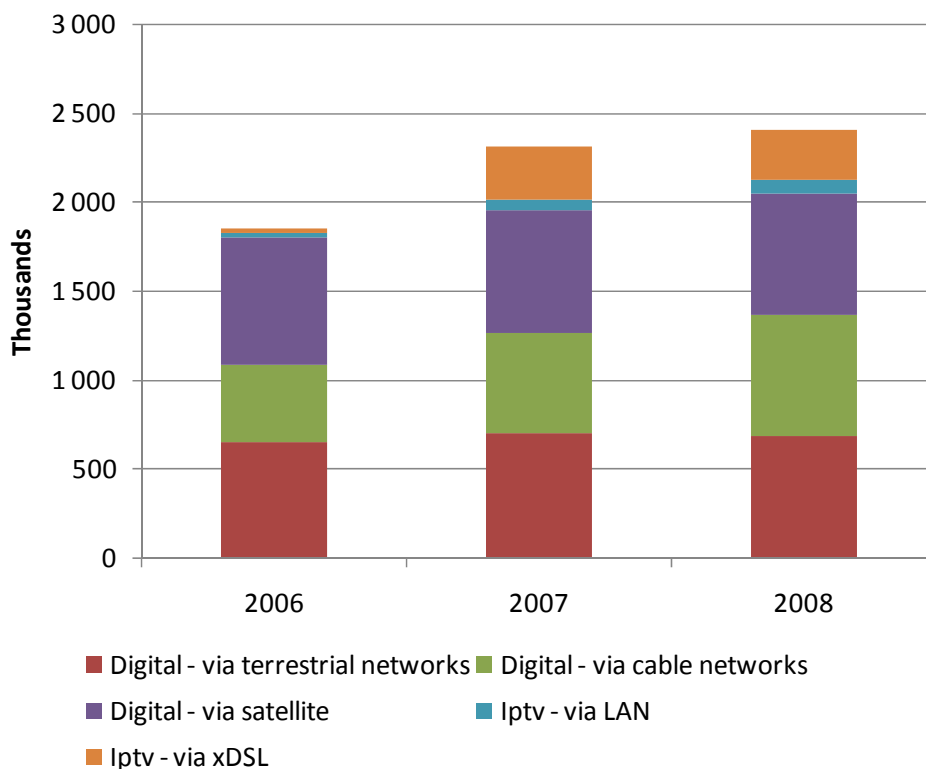
Diagram 13 All bundled subscriptions (thousands)



- Bundled subscriptions are becoming increasingly common. Overall, there were 740 000 bundled subscriptions on 31 December 2008 and, at the same time, just more than 8 per cent of all mobile telephony, fixed telephony, broadband and digital television subscriptions were bundled with other subscriptions.
- The most common form of bundling is ‘broadband + fixed telephony’ (340 000), followed by ‘fixed telephony + television + broadband’ (252 000).

2.6 Television services

Diagram 14 Distribution of digital television subscriptions between various distribution platforms



- On 31 December 2008, there were in total 2.4 million digital television subscriptions (including IPTV) on the Swedish market. At the same time in 2007, there were 2.3 million digital television subscriptions. The number of digital television subscriptions in cable television networks has increased the most, from around 554 000 to around 679 000.
- The number of IPTV subscriptions via the metallic access network decreased somewhat during 2008, but continued to increase in LAN networks. Consequently, the total number of IPTV subscriptions remains at around 352 000. The reason for the decrease of IPTV via the metallic access network is that TeliaSonera has started charging for this service after having initially offered it without extra cost.
- The estimated approximately 400 000 households that receive only free television via the digital terrestrial network are not included in the statistics.

3 Telematics

3.1 Introduction

Telematics – or machine-to-machine communication (M2M) as it is also known – refers to automated information exchange via a wireless connection between two or more machines, without any human involvement.

Telematics can be used in order to transfer measurement data and environmental variables from a mobile unit or sensor, for example in a vehicle, to a central point. The purpose may be to compile information about fuel consumption, determine a geographical position or check a distance travelled. If the mobile unit is installed in a building, telematics can be used to remotely read an electricity meter, for instance.

From the corporate economic perspective, there are several advantages with telematics, but most stakeholders that develop telematic solutions are oriented towards saving costs within existing operations.

By automating the flow of information and incorporating telematic solutions, productivity gains are made through the existing processes being made more efficient. Thanks to improved access to information, it is possible to use resources in a more efficient way through the telematic solutions reducing uncertainty and overall delivering lower search and transaction costs. For example, it is possible to rectify problems that arise quicker if the information comes automatically. In a corresponding way it is not necessary to perform any service or control measures before a need has been observed.

The introduction of telematics imposes great demands on integration, and therefore these solutions are normally developed in cooperation with the customer. This means that the relationship between the telematic stakeholder and the customer in many respects is in the nature of a partnership rather than a traditional buy-sell relationship.

Generally, it appears that there is a need to be able to position and monitor most things that have a value. Therefore, there is great potential for innovation in the use and development of telematics. In pace with more products being supplied with wireless connections, this will probably create new business opportunities and completely new business areas based on telematic solutions.

3.2 Market situation

Globally, there are a number of different technologies available that can be used for telematic connections. These connections have many similarities and are often based on for instance, conventional radio technology, but they also distinguish themselves as they allow variable transmission capacity and range. The technologies for telematics that are offered in the market today also vary a great deal as regards operating costs.

Two consultancy firms oriented towards IT and telecom, Harbor Research and ABI Research, estimate that in 2009 there will be 100 million units supplied for telematics (including sensors).¹⁷ Thus there is already today a rather large and established world market. ABI Research also considers that at present there are about 71 million machines that are connected via mobile networks. The main part of these machines (over 70 per cent) in Europe use GSM networks, while connections using CDMA are most common in Asia.

The choice of GSM networks in Europe results from the good coverage of the technology making it rather cost-effective compared with other established technologies in the market, such as UMTS. At present very small volumes of data are actually transmitted via the networks with the aid of telematic solutions,¹⁸ and the data packets in many cases also need to be transmitted long distances to a central point.

Berg Insight, a consultancy firm oriented towards the telecom market, estimates that in Europe in 2009 there will be over 14 million SIM cards that are intended for telematics-based connections. According to this firm, this represents an increase of about 2 million cards over a half-year, which indicates that the market is expanding rapidly. However, a comparison shows that telematics still comprise a marginal part of the total mobile market in most countries. Berg Insight points out at the same time that Sweden in this respect differs as regards the number of subscriptions, as it is estimated that over 10 per cent of all active SIM cards are already intended for telematics.¹⁹ This provides Sweden with a high ranking as regards use and development of telematics.

¹⁷ Information quoted from *The Economist*, 'The hidden revolution', 28 April 2007.

¹⁸ Telenor Connexion, which offers telematic solutions in Sweden, estimates that a telematics-adapted subscription does not use more than 0.25 Mbyte in data traffic per month.

¹⁹ Berg Insight, 'The European Wireless M2M market', 2008. Telematic subscriptions are reported separately in 'The Swedish Telecommunications Market', and are thus not included in the contract subscriptions and pre-paid cards reported in Table 15.

Table 2 Proportion of telematics-adapted SIM cards of the total number of SIM cards in use, 2009

Proportion (per cent)	Country
> 10	Sweden
> 5	Finland
> 2	Denmark
< 2	Germany, the United Kingdom, Italy, France

Source: Berg Insight, 2008

3.3 Market stakeholders

Today, several of the major telecom operators are in the global market for wireless telematic solutions, such as T-mobile (in cooperation with Wylless) and Orange. Most offer a number of products that are based on tested technological platforms, in mainly GPRS connection via GSM networks and advanced use of text messages (SMS). In recent times, more operators have also increased their ambitions in this area and, in the beginning of 2009, Vodafone for instance launched a new kind of specially adapted SIM card, new roaming contracts and a number of new telematics-adapted services.²⁰

Information gathered by PTS shows that the number of telematic subscriptions increased by almost 30 per cent during the second half-year of 2008, from 1.2 to 1.6 million. There are a handful of national stakeholders in the Swedish market, and amongst these Wireless Maingate, TeliaSonera and Telenor are the tone setters.

Wireless Maingate is a Swedish-based company that has specialised in telematic solutions. This company has been active in the market for more than 10 years and today has about 24 employees and sales of just under SEK 72m. Telenor itself states that they have worked with telematic issues since at least 2005,²¹ but during 2008 the company decided to reinforce its investment in this area by creating the separate company Telenor Connexion. The new company has sales of about SEK 200m²² and about 10 employees. As regards TeliaSonera's work within telematics, the company states that they established themselves in this area in 2001, primarily through joint development projects within the automotive industry. Today, TeliaSonera has 15 to 20 employees who only

²⁰http://www.vodafone.com/start/media_relations/news/local_press_releases/germany/germany_press_release/vodafone_intensifies.html 16 March 2009.

²¹ At the turn of the year 2005/2006, Telenor took over Vodafone's Swedish operations, which among other things included telematics. Vodafone had then worked with telematics since the end of the 1990s.

²² Calculation presented in the Swedish newspaper *Dagens Industri*, 22 December 2008.

work with the logistics market, and according to them, sales have increased greatly in this area in recent years.

If the various companies are compared with each other, it becomes clear that they have differences. Measured in the number of subscriptions, Telenor is the largest, followed by TeliaSonera and Wireless Maingate. In contrast to TeliaSonera, Telenor Connexion has to a large extent chosen to orient itself towards the electricity market, primarily solutions for distance reading of electricity meters. TeliaSonera has to a greater extent invested in logistics services and the automotive industry. These segments have had a lower rate of growth than the electricity market, which has resulted in TeliaSonera having a lower growth in subscriptions but higher revenue figures per subscription compared with Telenor. TeliaSonera is also a wholesaler of telematic subscriptions for Wireless Maingate.²³ Wireless Maingate has however, like Telenor, given priority to the electricity market, which today represents 60 to 70 per cent of the company's sales.

Moreover, Wireless Maingate has a greater proportion of telematic subscriptions adapted to the security industry and sales terminals than TeliaSonera and Telenor, which results in higher sales per telematic subscription. During 2008, Wireless Maingate had almost twice the revenues per subscription compared with TeliaSonera and almost three times as much as Telenor Connexion.

3.4 Customer segment

The telematics market can be broken down into a business market, with improvements to process efficiency and a consumer market, which is characterised by, for instance electricity meters, vehicle tracking and alarm systems. However, as regards the consumer market, the operators and companies that develop telematic solutions do not usually refer to the end users. Instead they have to a large extent different partners who have integrated telematics as part of their other product range. This is, for instance, the case with Securitas, which offers alarms with wireless connection and Volvo Cars, which offers automatic positioning services in the case of, for instance, accidents.

Sweden is an important market for the telematic solutions that have been launched by, among others, Telenor Connexion, Wireless Maingate and TeliaSonera, but the telematics market is global. One important reason for this is that the companies that choose to invest in telematics often need solutions

²³ Wireless Maingate does not own its own network, but uses TeliaSonera's GSM network for its products.

that can function regardless of geographic location. This is particularly important for the automotive sector and the logistics sector, but also for businesses that provide security solutions and energy transfer. Several companies that have based their business concept around automatic sales (Point-of-sale), for example parking companies and companies that offer beverage machines, also use telematics. There are also advantages here with not needing to take into consideration national borders.²⁴

Moreover, the insurance sector has also demonstrated great interest in telematics, not least as the technology could possibly contribute to reducing risks through providing better information about different insurance objects. There is also great potential for monitoring and controlling business-critical processes in base industries with the help of telematics.²⁵ The same also applies to health and medical services, where telematic solutions could possibly facilitate remote patient management.

The Swedish market is in many ways a reflection of the global market. The dominating telematics customers are vehicle manufacturers such as Volvo and Scania, and energy undertakings such as Vattenfall, E.ON, Swea Energi and Fortum. In the security market there is among others Securitas, and there is also a large and growing group of customers within the retail trade who use the telematics company BAB's wireless payment terminals.

3.5 Future potential and challenges

The Swedish telematics market has grown rapidly in the course of last year, and it is reasonable to assume that the market will grow further in the future. Telenor forecasts, for instance, that it will have sales of over a billion kronor around 2012, which can be compared with a couple of million during 2005.²⁶

Forces behind the current and expected growth are the development within the electronics area which have resulted in components for wireless connections becoming both smaller and less expensive, at the same time as changed rules within the Swedish electricity market have promoted an increase

²⁴ Through having a solution that suites most countries, it is for instance easier to lease vending machines for sporting events and conferences.

²⁵ One example is Alfa Laval, that has chosen a 3G solution to monitor a water purification system at its production facilities. See <http://www.processnet.se/iuware.aspx?pageid=4216&ssoid=98559>.

²⁶ Even if this represents an increase, telematics is still a rather small subset. Telenor's other operations have sales of approximately SEK 110bn and employee 34 000 employees in 13 countries.

in demand for telematic solutions.²⁷ The current segment within telematics suggests that customers wish to have mobility, flexibility and security. This indicates it its turn that there is good market potential for telematic solutions, not least in Europe where mobile coverage is good at the same time as the operators have a great need for innovation in the telecom area in order to be able to retain their margins and their earnings capacity. Berg Insight estimates that in 2013 there will be scope for at least 600 million commercial telematics-based connections with applications within energy, vehicle, security and vending machine sales. However, there are different views on how rapidly the market will develop. ABI Research forecasts that globally there will be delivered upwards of 280 million modules intended for telematics during 2011, while Harbor Research predicts a more rapid growth of the market by 400 million units that year.

If investments reduce, this will probably slow down the transition to and development of telematics. This view is shared both by Berg Insight, which considers that 25 per cent of Europe's 345 million electricity meters will be connected by 2013 – but that the rate of connection will thereafter increase greatly in pace with the effects of economies of scale and increased pressure by the public and politicians. The same also applies to motor vehicles. According to Berg Insight, there will be approximately 31 million telematics-based SIM cards in passenger cars in 2013.

As pointed out in the introduction, today the GSM networks are used for most telematic solutions in Sweden. According to Telenor's calculation, it will take up to 2014 before we see any manifest transition to another technology, for example 3G networks. The possibility of using existing GSM networks for new applications of telematic solutions creates potential for the operators to increase revenues without very extensive investments in, for instance, capacity-enhancing measures. In this way, the sub-market telematics distinguishes itself from for instance the sub-market mobile broadband, which is another growing segment in the area of mobile call and data services.

However, considering the current commercial platforms for telematics are based on existing tested technology, it is remarkable how long a time it has taken for the telematics market to develop. One explanation may be that the transition to telematic services imposes great demands on integration, both

²⁷ In 2003, an amendment to the 'metering ordinance' in the Electricity Act was approved. This amendment entails an obligation for network owners to read electricity meters at customers at least once per month. Moreover, from and including 1 July 2009, all Swedish electricity customers shall be invoiced according to actual use, which gives an incentive to find cost-efficient reading possibilities. For more information, see Government Bill. 2002/03:85, Committee on Industry and Trade Report 2002/03:NU11.

within businesses and between businesses and customers, which can result in disruptions to routines, cultures and methods of working. The electronics and telecom sector has been characterised by established standards, but there are to a large extent no such standards within the area of telematics. This also means that work with implementation can be expensive, as solutions within new segments require tailor-made solutions for each customer's individual needs. The good examples that have been produced may, in other words, not be transferred from one customer to another without individual readjustment and adaptation.

There is also a challenge that affects various technical solutions and the need of, for instance, multiple antennae to be able to achieve cost-effective transfer and transmission regardless of geographical position (for instance a coverage problem) and the access technologies available. The latter is particularly important when telematic solutions are to be used for mobile units. Currently, extensive research is in progress concerning software-based radio (Software Defined Radio – SDR) which would make it possible for a radio unit to simulate hardware components and thereby change between different standards and frequencies. However, progress to date has been limited.

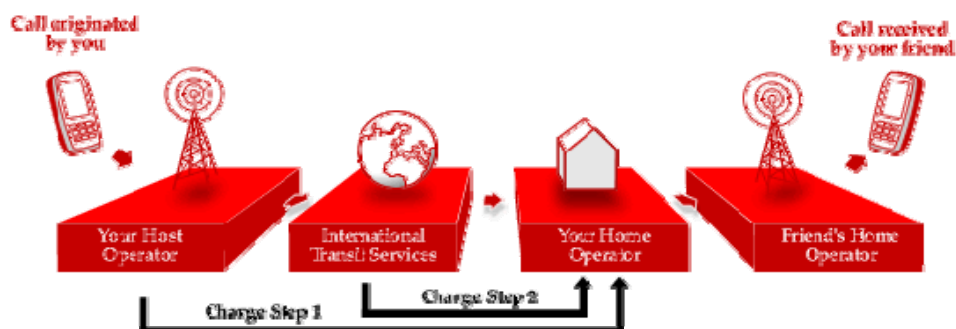
Yet a further challenge for the telematics market lies in integration issues and the security that must surround data collection. Information from machines, buildings and vehicles that is gathered by telematic connections could possibly be linked to specific stakeholders (companies or private individuals) if such data is run jointly, which could potentially threaten both personal privacy and business secrecy.

4 International roaming

International roaming means that a subscriber uses their mobile telephone abroad, outside their operator's network and area of coverage, that is to say when the subscriber is a visitor within another network abroad. Mobile operators conclude 'roaming contracts' between themselves in order to provide opportunities for making calls and receiving calls from abroad, and in this way the operators can charge the call on the ordinary telecom bill without the foreign operator needing to send any bill to the end user. Roaming contracts govern, among other things, the compensation the operators charge each other for allowing other operators' foreign subscribers to use mobile telephones in their own network.

When Swedish customers use mobile telephones abroad, other prices and conditions apply than if the mobile telephone is used in the network at home in Sweden. For instance, a customer who is located abroad pays for a particular part of the cost for calls received, that is to say when the customer is located abroad and is called by someone else. Calls to one's own voice mailbox from abroad are also charged as a call to Sweden and normally cost many times more than a domestic call.

Diagram 15 International roaming²⁸



International roaming became technically possible in the early 1990s as of the launch of GSM though, for roaming to function in practice, economic agreements are required between the operators in the form of roaming contracts. Neither the establishment nor content of roaming contracts is currently governed by any national authorities, but the operators' cooperating

²⁸ Diagram from GSM Europe, www.roaming.gsmeurope.org

organisation, the GSM Association (GSMA), has produced rules of conduct for international roaming.

4.1 Current and future regulation within the EU

The European Commission has on several occasions urged mobile operators to voluntarily reduce roaming charges for voice calls, but without success.²⁹ In order to reduce roaming charges, the Commission therefore imposed a Regulation that was almost unanimously approved by the European Parliament in May 2007 and thereafter entered into force on 30 June 2007. In January 2008, the supervisory authorities of EU States confirmed that the Regulation has been implemented without problem throughout the EU.

Besides roaming charges, the Regulation governs the means of providing information about price details so that they can become more easily accessible and clearer for consumers. The operators are liable to provide free information about roaming charges through a text message when one enters another EU country, and customers can also receive free information about roaming charges via telephone or SMS.

The European Parliament³⁰ approved in April 2009 a broader and extended Regulation, which entered into force on 1 July 2009 and ceases on 30 June 2012. The latest Regulation also covers SMS and data.

4.1.1 The Eurotariff for voice calls is gradually reduced over a five-year period

According to the Regulation, roaming charges at the wholesale and end-user level may not exceed a certain price level, the 'Eurotariff'. In this way the Eurotariff functions as a price ceiling under which the operators compete with each other for the most beneficial bundled prices. The Eurotariff has different prices for calls made and received respectively, and these prices are to reduce gradually according to Table 3.

²⁹ See for example

http://ec.Europe.eu/information_society/newsroom/cf/itemlongdetail.cfm?item_id=4242,
<http://Europe.eu/rapid/pressReleasesAction.do?reference=IP/07/870&format=HTML&aged=0&language=EN&guiLanguage=en>,

http://ec.Europe.eu/information_society/newsroom/cf/itemlongdetail.cfm?item_id=2971 and

http://ec.Europe.eu/information_society/newsroom/cf/itemlongdetail.cfm?item_id=2560.

³⁰ At the time of writing, the Council of Ministers has not yet approved the Regulation, but this is planned to take place in June 2009.

Table 3 Eurotariff, planned reduction

Charge ceiling (euro per minute, excluding VAT)	From 30 Aug 2007	From 30 Aug 2008	From 1 July 2009	From 1 July 2010	From 1 July 2011
Calls made from another EU country	0.49	0.46	0.43	0.39	0.35
Calls received in another EU country	0.24	0.22	0.19	0.15	0.11

According to the proposed Regulation, which it is assumed will enter into force on 1 July 2009, mobile operators should charge users for each second of the duration of a call, but it will continue to be allowed to have an overall charge for the first 30 seconds of the call, a 'connection charge'. Today, users in the EU pay 25 per cent more than the minutes they actually use when they call and 19 per cent more when they receive calls.³¹

Nor will subscribers after 1 July 2010 have to pay to receive voice messages in their mailbox when they roam, as they cannot control the length of these messages in the same way as traditional calls.

4.1.2 Eurotariff for SMS introduced 2009

Roaming costs for SMS will be regulated as of and including 1 July 2009 so that EU citizens travelling in other EU countries should not need to pay more than 0.11 euro (excluding VAT) for each SMS they send, which can be compared with the current EU average of 0.28 euro per SMS. In the future it may also be free to receive SMS. SMS price regulation shall also be combined with a ceiling of 0.04 euro at operator level, that is to say for the charges that the operators charge each other when subscribers send SMS between their networks. In the same way as for the Eurotariff for voice traffic, the operators will be urged to compete with prices that lie under these ceilings.

4.1.3 Wholesale price ceiling introduced for data roaming 2009

Besides voice and SMS traffic, the European Commission also wishes to achieve more transparent pricing for surfing and downloading data with mobile telephones and computers via mobile networks abroad. The aim of this is to protect consumers who are used to having less expensive data services at home against shocking bills for roaming abroad, which can sometimes amount thousands of euro. In contrast to roaming call services and SMS roaming services, there is here some competitive pressure at the retail level, as roaming customers can gain access to data services in more ways than via mobile

³¹ ERG (09) 01 International Roaming Report 090107.

networks, for example via public wireless networks that are connected to the Internet.³²

End users shall also, as regards data roaming charges, receive an automatic message with data roaming charges when they are located in a country with the Eurotariff. As of and including March 2010, consumers shall, according to the Regulation, be able to state in advance how high an amount their roaming bills may be before the service is disconnected.

According to the proposed Regulation, a ceiling will be introduced for the wholesale price for data roaming on 1 July 2009, and after that date the price ceiling for 1 Mbyte will be 1 euro. The price ceiling will then be reduced gradually to 0.5 euro per Mbyte of data on 1 July 2011. The price ceiling refers to wholesale prices, but the Commission hopes that this will also result in lower prices for the consumer.

4.2 Current situation in Sweden

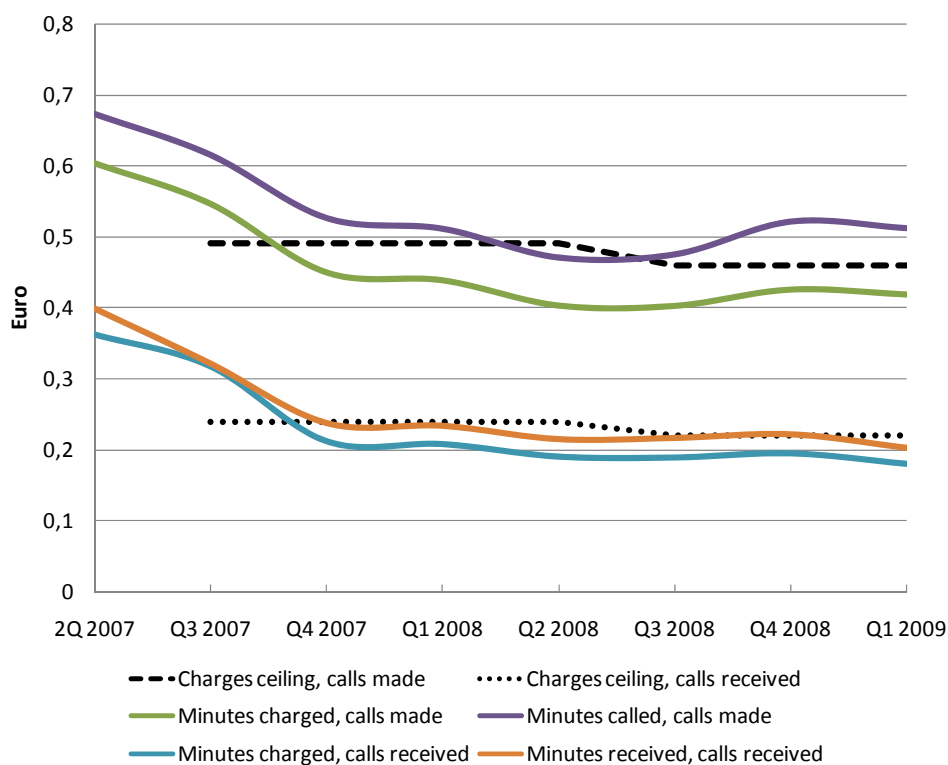
4.2.1 Prices and volumes

PTS and the other European regulatory authorities in this area of regulation have compiled data quarterly on the assignment of the European Regulators Group (ERG). Some of the information collected is reported below at an aggregated level for the Swedish market, for the period second quarter 2007 to first quarter 2009.

The prices below are stated in euros (€) excluding VAT although the operators in the Swedish market charge their subscribers in Swedish kronor (SEK) including VAT. Variations in rates of exchange may thereby be one cause for prices having fluctuated.³³

³² WLAN services are not as mobile as roaming services.

³³ For the period 2007 Q2 to 2008 Q3, the rate € 1 = SEK 9.2525 was used when reporting to the ERG. For the period 2008 Q4 to 2009 Q1, the rate € 1 = SEK 9.45 was used.

Diagram 16 Average price per minute excluding VAT

Before the Regulation entered into force, the average price for Swedish subscribers who made calls from countries subject to the Regulation was 0.60 euro per minute charged. The corresponding price for calls that were received within these countries was 0.36 euro. The development of this price is shown in Diagram 16. One year after the Regulation entered into force, these prices had reduced to 0.40 and 0.19 euro per minute charged respectively.

As regards calls that were made or received in countries outside Europe, Swedish subscribers were charged on average 1.39 and 0.92 euro respectively during the second quarter of 2007, that is to say before the Regulation was introduced in the European market. However, it is somewhat misleading to study the average prices for calls made and received in all countries outside the EU in one and the same call post, as there are great variations between the countries in rates of exchange and prices. The statistics also show higher average prices during the winter half-year than the summer, which can partly result from Swedes then to a greater extent visiting countries that are, from the perspective of roaming, more expensive, such as Thailand and Egypt. Notwithstanding this, we can see that average prices have reduced during the

summer months over the last year, while they have increased slightly during the winter months. Even if the material is a little unclear, there is a sign that the Swedish operators charge more in the unregulated markets.

The average price per SMS sent has reduced from 0.22 to 0.17 euro between the second quarter of 2007 and the third quarter of 2008, but this increased then to 0.25 euro during the first quarter of 2009. The corresponding figures for countries outside the EU show a reduction from 0.32 to 0.25 euro and then an increase to 0.30 euro per SMS. The variation in average prices for SMS in the most recent quarters can to a large extent be explained by one stakeholder having included a large amount of telematics-related SMS at a very low tariff, which influenced the low average. The operation no longer forms part of that operator's activities and consequently nor is it reported.

The average prices for transferred Mbyte of data have also reduced in recent years although there has not yet been any price regulation for mobile data traffic. The average price per Mbyte has reduced from 6.76 to 3.36 euro for mobile data traffic within the EU countries and from 13.56 to 11.34 euros for countries outside the EU.³⁴ Certain operators with networks in several countries charge a national tariff for mobile data traffic regardless of whether the user travels between countries where the operator is established. Such an example is the operator Tre, who in its network has a harmonised price for mobile data traffic in Sweden and Denmark, which in this context results in low average prices of 0.07 euro per Mbyte.

As regards the number of SMS sent and call minutes generated by Swedish subscribers abroad, the information base does not show any definite increases or reductions. The volume of traffic varies over the year as there are probably more Swedes who make use of roaming during the summer half-year. The volume of data traffic generated by roaming measured as Mbyte is, however, constantly increasing and there has been a sixfold increase from the last quarter of 2007 to the first quarter of 2009.

4.2.2 Swedish behavioural patterns

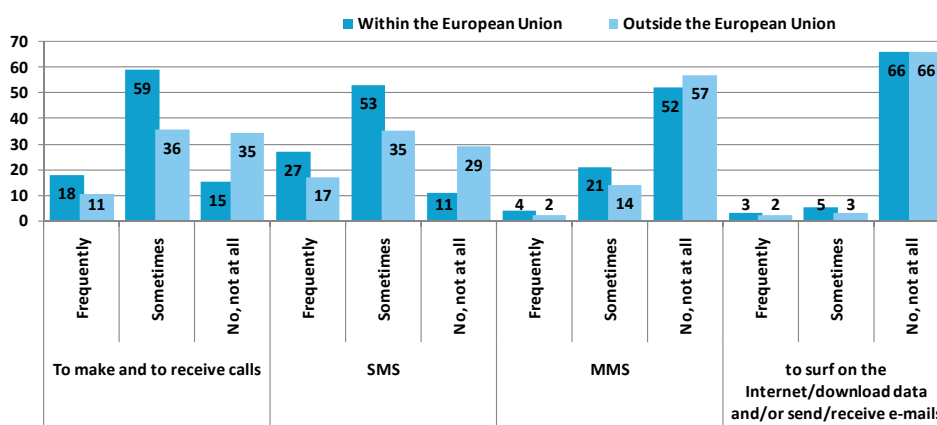
More than half of Swedes (61 per cent) who use mobile telephones for private purposes stated in the autumn of 2008 that they had travelled abroad during the last year. Most of these use the mobile telephone to make and receive calls, and even more usually send SMS (80 per cent, see Diagram 17). Every fourth Swede who travelled to a country within the EU uses MMS often or

³⁴ However, prices vary greatly depending upon which operator and price plan the consumer chooses. It is necessary in most cases to buy special add-on packets adapted for foreign traffic in order to benefit from lower roaming prices from the Swedish operators.

sometimes. Swedes use mobile telephones significantly more when they travel within the EU than outside, but 66 per cent claim that they have never surfed on the Internet, downloaded data or sent or received e-mail. This proportion is the same size for travellers within and outside Europe.

The result does not take into account whether the journey was made for business or vacation purposes, which may entail differences. Nor are travel patterns taken into account, for example the number of journeys in the last year or proportion of journeys within or outside the EU.

Diagram 17 Use of mobile telephone abroad

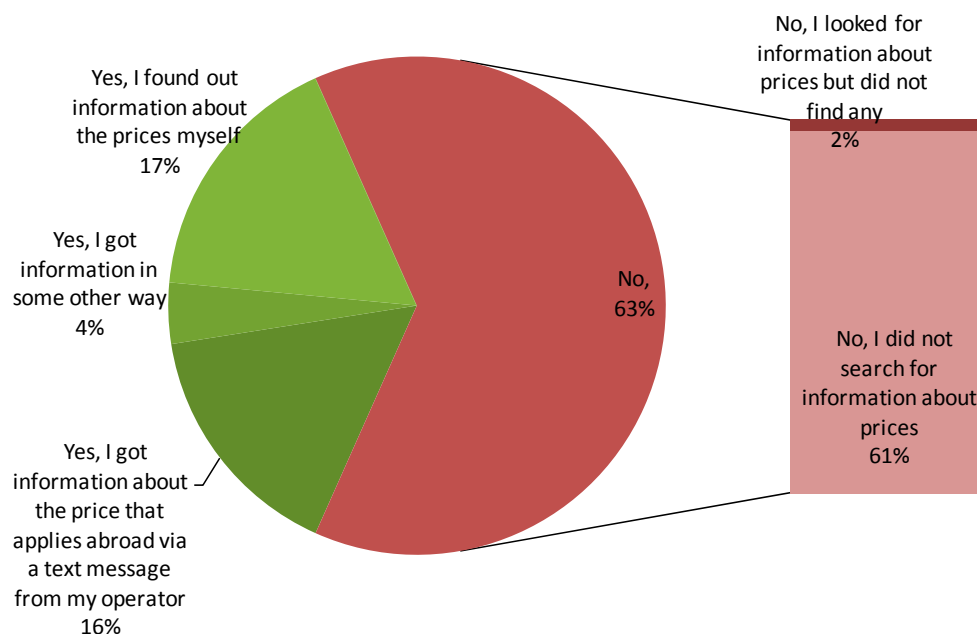


In the case of travel within the EU, mobile operators are liable to send an SMS to the owner of the mobile to inform them of the price that applies in that country. This is an obligation that rather many people are probably still unaware of or quite simply do not think about. In 2008, only 16 per cent said that they had received information about the price that applied abroad via an SMS from their operator, and the year before the corresponding figure was 9 per cent.³⁵

Of the Swedish population that travelled abroad during the last year, approximately one-third studied the prices for various mobile operators in some way before they travelled (see Diagram 18).

³⁵ Subject to reservation for a direct comparison and that this response alternative was reworded slightly.

Diagram 18 Awareness of tariffs for mobile telephone use abroad



4.3 Sweden compared with other countries

This section is based on data that has been gathered quarterly by PTS and the other European regulatory authorities.³⁶ The information gathered has been compiled regularly and published in reports from the ERG. The latest report was published in January 2009, and it is expected that the next report will be published in July 2009.

4.3.1 Number of traffic minutes

The ERG report states both the number of minutes that the operators within the EU charge with the Eurotariff and the actual number of minutes called. These volumes differ from each other as the end user is normally charged for more minutes than they call (see Diagram 16). The difference between charged and actual minutes is governed by the charging interval length – the longer the charging interval applied, the greater the gap between the number of minutes for which end users are charged and the number of actual call minutes. On average, the number of minutes charged for outgoing calls is 25 per cent more

³⁶ ERG (09) 01 International Roaming Report 090107, published on 12 January 2009. A new report will be published in July 2009 on ERG's website at www.erg.eu.int.

compared with the actual number. The corresponding figure for calls received is 19 per cent more minutes.

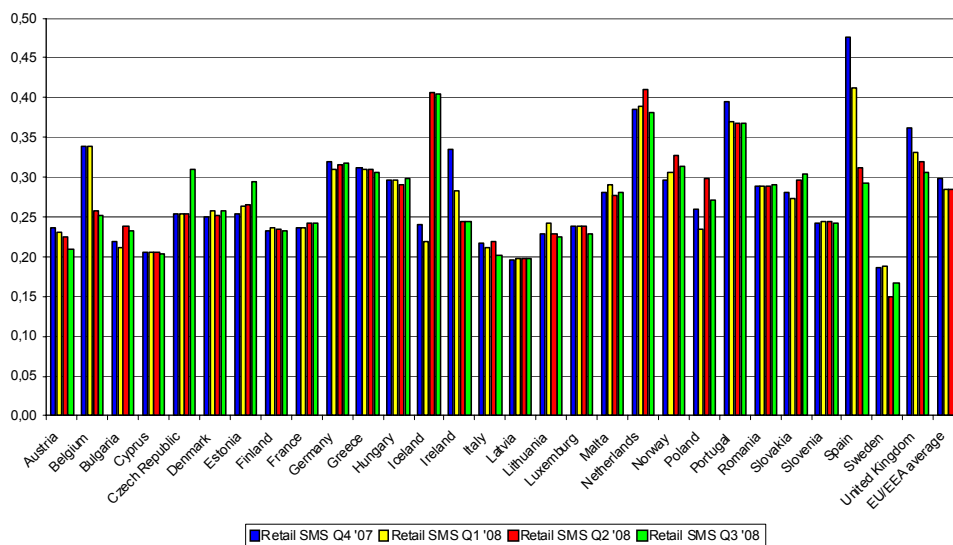
The information from Sweden shows that corresponding figures for the Swedish operators lie somewhat lower owing to the Swedish operators charging for 22 per cent more minutes than those that are actually called and 12 per cent more minutes than those that are received. This difference probably results from the Swedish operators having shorter charging intervals. The average price for calls charged according to the Eurotariff is 0.42 euro per minute charged and 0.51 per actual minute for calls that were made during the first quarter of 2009. The corresponding price for calls that were received was 0.18 euro per minute charged and 0.20 per actual minute.

4.3.2 SMS prices

Swedish operators have distinguished themselves by charging their customers the comparatively lowest average price per SMS. For Swedish consumers, during the third quarter of 2008 the average price for sending an SMS from countries that apply the Eurotariff was 0.17 euro and from other countries 0.25 euro. The average price for sending an SMS from countries with the Eurotariff was 0.28 euro.

Diagram 19 Average price for SMS from countries with Eurotariff

Figure 9: Average retail price per SMS for pre-pay and post-pay consumers: EU/EEA



One of the Swedish operators asked has a large volume of telematics-related SMS that were charged at a very low rate. This may explain why Sweden had such low average prices for SMS in the comparative statistics. However, the operator in question divested its telematics operations to a separate company during the second half-year of 2008, and according to the information collected for the first quarter of 2009, the average price per SMS sent rose to 0.25 euro.

ERG's report³⁷ also shows that the Swedish operators are among those who charge most per SMS sent from other operators in the EU. They charge over 0.20 euro per SMS, while the average for the EU lies at 0.15 euro.

4.3.3 Data

There is a great difference between the prices of various countries for data roaming. However, Sweden's operators lie approximately around the average as regards the price per Mbyte for roaming with other operators outside their own group. The average revenue charged for a Mbyte of data has reduced by one-third, from over 6 euros during the last quarter of 2007 to less than 4 euros one year later. The average revenue per Mbyte transmitted may, however, be greater. Precisely as in the case of call traffic, the charging interval for data traffic is a key factor for understanding the operators' total traffic revenues. A charging interval of 100 Kbits generates for example higher revenues than one for 1 Kbit.

However, Sweden and Denmark distinguish themselves with a low average price as regards roaming within the same operator group. This results from two of the operators applying a flat rate for data traffic, which also covers roaming within certain operators' networks in other countries. This pricing results in high volumes but low revenues for international data roaming.

³⁷ ERG (09) 01 International Roaming Report 090107, Diagram 11.

5 Cloud computing and capacity in mobile networks

5.1 Introduction

‘Cloud computing’, as it is often referred to in the media, proved to be a strong trend during 2008. Cloud computing may be said to be a broad collective name for the phenomenon that increasing numbers of IT functions are offered as Internet-based services when they were previously dependent on locally installed platforms, applications and/or local hardware. In more concrete terms, this may mean that a business chooses to rely on Internet-based virtual services instead of investing in its own hardware and software in the form of servers, software and network equipment. For private individuals, this may involve an opportunity to store pictures, music, film clips, documents and other material on the Internet in order to be able to access these files from any Internet connection terminal whatsoever.

The term ‘cloud computing’ is used broadly and therefore it is difficult to measure this phenomenon as regards revenue or number of users. However, several major stakeholders such as Microsoft, Google and IBM are now pursuing initiatives in this area³⁸, and smaller stakeholders have also launched services that have achieved great success and publicity. One example in this category is the Swedish ‘Spotify’.³⁹

There are a number of potential advantages with the development towards more cloud computing. First, there are probably both socioeconomic and environmental economies of scale, for example, through centralising a large number of servers or kinds of hardware instead of these being stored and maintained by each individual company. Second, cloud computing allows flexible business models, as the need for locally installed software reduces. Private individuals and companies may then find it easier to pay for specific functions (for example word processing) rather than for entire programs (for example Microsoft Word) if the software is offered as a service via the Internet. For the same reasons, it is probably easier to offer the end users more adaptations and tailor-made services than before. Third, the preconditions for mobility increase with cloud computing because the service that is required for the moment is not bound to a hard disk on a computer, for example, but can

³⁸ Microsoft:

http://www.microsoft.com/sverige/pr/articles/2008/081027_windows_azure_services_platform_nyhet.aspx; Google: <http://www.google.com/a/help/intl/sv/index.html> and IBM:

<ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/oiw03022usen/OIW03022USEN.PDF>.

³⁹ <http://www.spotify.com/en/help/faq/#about-spotify>.

be reached from whatever terminal is being used at that particular time that is connected to the Internet.

The development towards cloud computing may have a number of consequences on the Swedish telecommunications market, not least as regards:

- the volume of traffic in the networks
- security aspects
- business models
- accessibility

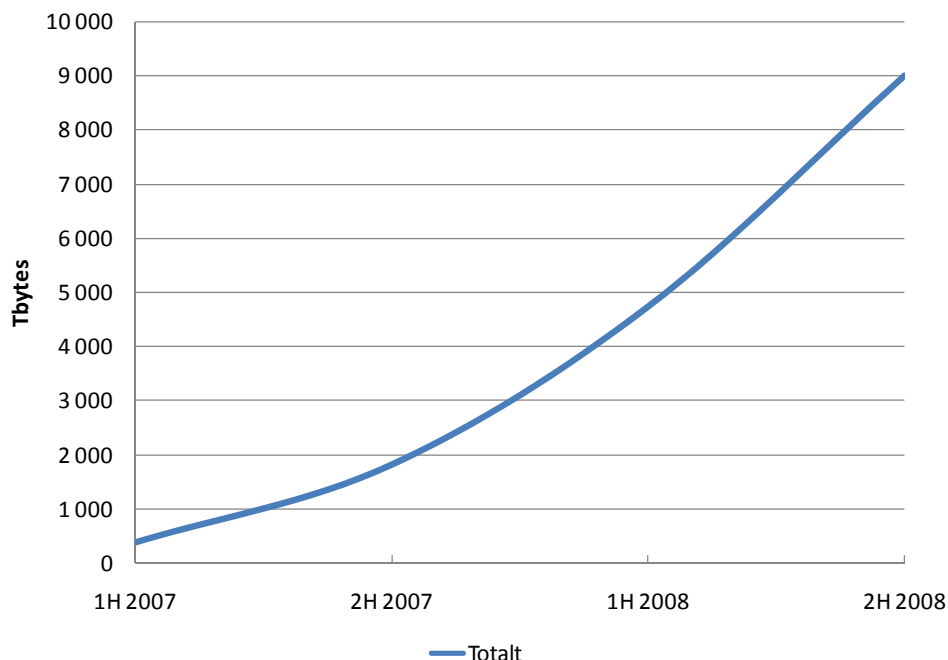
In pace with functions that were previously provided locally or via local networks being transposed to the Internet, the need increases for both bandwidth (services requiring high capacity are also shifted in this way) and the security of the networks (only those for whom the services in question are intended should be able to gain access to them in a secure way, with few disruptions).

The future rapid increase in packet data in above all else mobile networks will in its turn probably require new business models to adapt traffic to existing capacity in the networks.

In sparsely populated areas, where many people can only get broadband via mobile networks, this may mean that the possibility of gaining access to services offered on the Internet with continuously increasing demands on high capacity will be limited or made more expensive compared with those areas that have fixed broadband. Functional IT infrastructure with high transmission capacity in all parts of the country therefore represents an important component for being able to supply the services of the future.

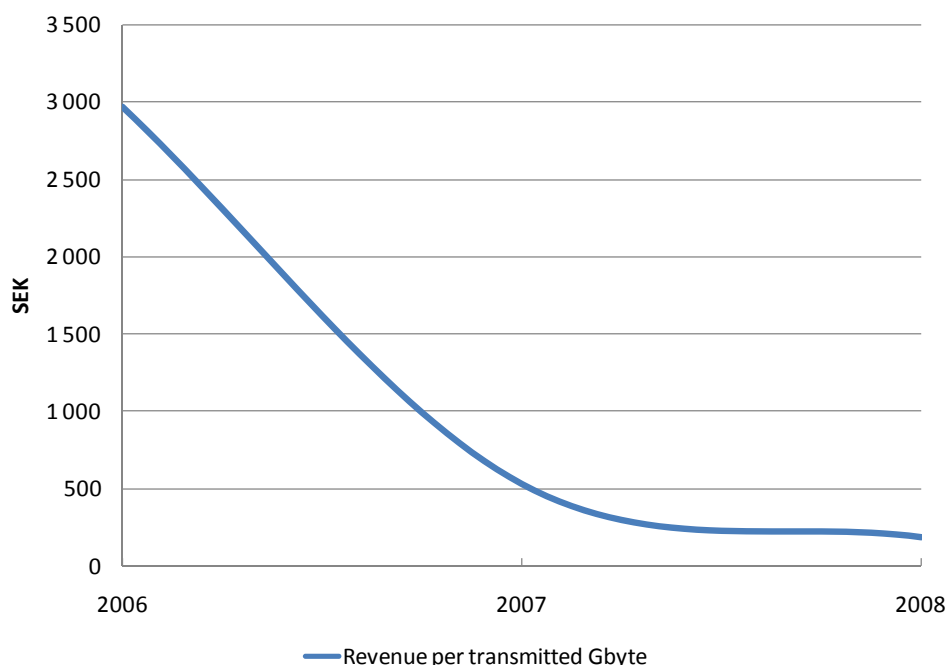
5.2 Effects of increased traffic in the mobile networks

PTS operator statistics show that both the total traffic in the mobile networks and data traffic per mobile subscriber has increased dramatically, primarily over the last two years (see Diagram 20).

Diagram 20 Total data traffic in mobile networks

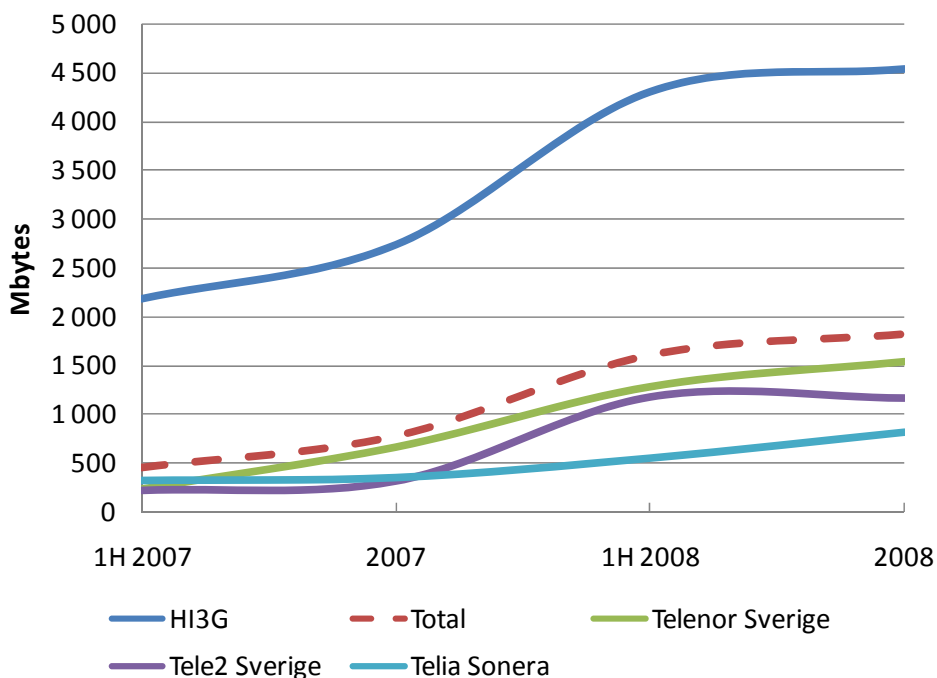
Mobile broadband subscribers represent the major part of increased traffic volumes. Several major mobile network operators in Sweden have given notice that they are going to upgrade their mobile networks to satisfy capacity demands, but at the same time newer, faster and more expensive subscriptions for mobile broadband were launched while the ‘capacity ceiling’ has not changed to any great extent.⁴⁰ Faster subscriptions without the capacity ceiling being lifted may be viewed as one way of suppressing the increase in data traffic in the mobile networks, which has today progressed more rapidly than the increase in the number of users of mobile broadband. In recent years the revenues from mobile broadband are low in relation to the amount of traffic generated by the service. Now that the networks are being filled up, revenues reduce per transmitted Gbyte and investment costs are increasing for operators that need to build out and intensify the networks to be able to satisfy the increased demand for capacity (see Diagram 21).

⁴⁰ According to Telepriskollen, 20 of a total of 21 offers of mobile broadband had some kind of express capacity ceiling or variable cost per Mbyte at the beginning of June 2009. Most offers have a capacity ceiling of between 1 and 5 Gbytes per month. If more data than this is transmitted, the customer must either pay for the further traffic or is penalised with strangulation of capacity, often to a maximum of 30 Kbits per second.

Diagram 21 Revenue per transmitted Gbyte in mobile networks

Cloud computing and constantly increasingly advanced mobile terminals mean that many more functions can be dealt with via any terminal whatsoever that is connected to the Internet, and it is therefore likely that the demand for rapid, secure and reliable connections via mobile networks will consequently increase further in the future. Demand for capacity in the mobile networks also suggests that the capacity ceiling of between 1 and 5 Gbytes will be insufficient in the future; and this will also apply to user categories who do not share files to any great extent. A subscription with a ceiling of 3 Gbytes per month with up to 14.4 Mbits per second allows, for example, downloading at a maximum rate of about 30 minutes per month.⁴¹ Diagram 22 shows that the total average data traffic in mobile networks per subscription to mobile broadband has increased slightly since the first half-year of 2008, from 1.6 to 1.8 Gbytes per month, and that there was a great variation between various operators.

⁴¹ Based on 1 Mbyte being equivalent to 8 Mbits, which provides $24\,000 / 14.4 / 60 = 27.8$ minutes.

Diagram 22 Average data traffic in mobile networks per subscription to mobile broadband and month

In simple terms it can be said that the phenomenon cloud computing contributes to increasing demand for capacity, which in its turn increases the need for investments to be made in the mobile networks. Operators' revenues from subscriptions for mobile broadband are, however, too little to cover the costs of such investments, and prices are therefore increased, which in turn will probably make the product less attractive. For this reason, the operators need to develop new business models to achieve long-term sustainable business with mobile broadband that both satisfies the needs of end users and generates revenues for future investment.

5.3 New business models

As described above, cloud computing contributes to increasing data traffic in the mobile networks, which requires changes to business models. At the same time, it can be said that cloud computing competes directly with the operators' content services. It is becoming increasingly common for functions that could previously only be offered by the operator at an additional cost (for example sending a picture via MMS) are currently processed via the terminal's Internet connection without any additional cost (for example by sending the picture via e-mail). Mobile telephony subscriptions have actually been launched that, in

the first instance, use the 3G network to relay voice traffic via mobile packet data.⁴² In a similar way, it is on certain terminals possible to install applications that facilitate Internet telephony and thereby do not generate any call revenues for the operators.⁴³ One other example is the downloading of ring tones, where many people use third-party suppliers via the Internet rather than the operators' special services. In this way, the operators act rather as intermediary providers of Internet than suppliers of content services. This is one effect of cloud computing which further illustrates the need for new approaches.

It is of course difficult to assess which business models will be competitive in the future, but the operators have to labour with above all else the following variables, whether separately or in combination:

1. Changed charging according to data volume used.
2. Bundling with fixed broadband.
3. Differentiation depending upon content of the data traffic.

The operators can differentiate their subscriptions by changing the charge per volume of data used, for example by changing the capacity ceiling in combination with sales of further data traffic as an add-on. Another possibility is to launch even more beneficial combination offers with fixed broadband in order to channel some of the traffic to fixed networks. It is, however, unclear how the end users would react to such changes in the operators' price plans, as the trend is increasingly clearly towards increased mobility and nondependence on terminals.

One can also consider business models where the price or the capacity depends upon whether the user surfs to elective sites or to sites where, for example, the operator or a cooperating partner offers its services.⁴⁴ Today, bandwidth is allocated in mobile networks mainly according to needs (Best effort) instead of the operators prioritising certain traffic in favour of another (Quality of Service). PTS's position on this matter is that Internet users with 'Best effort' should be at liberty to receive and send content and also use services that do not harm the network, while the operator may not manipulate or give lower priority to traffic depending upon content, origin or destination and should provide clear information about the capacity and quality of the connection. As yet, PTS has not considered that there is reason to act on any

⁴² See, for example, <http://www.megaphone.se>.

⁴³ For example Skype Lite™.

⁴⁴ Bredbandsbolaget is, for instance, cooperating with Spotify, which is bundled with certain subscriptions to mobile broadband.

matter related to network neutrality. PTS will in the first instance work to ensure that users are well informed about service quality, etc. In addition, PTS will monitor the issue from an international perspective.⁴⁵

5.4 Effects on accessibility

Regardless of which way the operators modify price plans for mobile broadband to increase margins, the price of mobile broadband will probably increase in proportion to corresponding rates and functionality with fixed broadband. Such development would make it more expensive for those households and businesses that can only reach the Internet via mobile broadband when they wish to have access to the new functions and services resulting from, among other things, cloud computing. As regards access to IT infrastructure for those households and businesses that do not have or have far too limited opportunities of gaining access to electronic services, PTS's view is that the USO tool⁴⁶ represents an important resource that should be extended to accesses higher than the current USO level of 20 Kbits per second.⁴⁷ Another measure could be to put in place a bitstream product that is attractive for alternative operators to TeliaSonera, which would stimulate competition and facilitate the offering by operators of xDSL services with high transmission capacity where such services are not offered today. The capacity in the fixed networks is not as restricted as in the mobile networks, and therefore the operators do not have as great incentives to introduce new price plans with capacity ceilings or other restrictions for xDSL subscriptions in a corresponding way as for subscriptions to mobile broadband. Mobile broadband is today actually the most common form of access for those inhabitants and businesses that cannot get Internet access via fixed or mobile solutions (see Diagram 23).⁴⁸

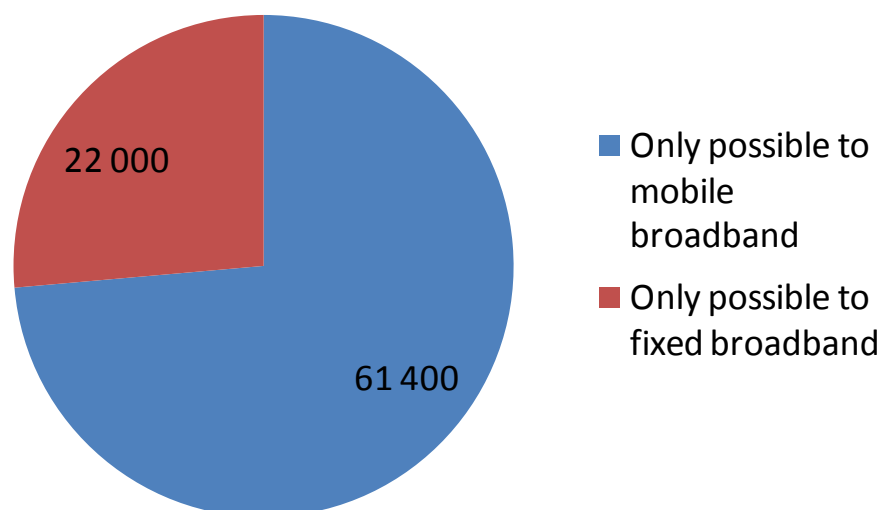
⁴⁵ PTS-ER-2009:6.

⁴⁶ USO stands for Universal Services Obligation and the 'USO Directive' governs which electronic communications services are to be universal.

⁴⁷ PTS-ER-2009:8.

⁴⁸ PTS-ER-2008:

Diagram 23 Population in areas with basic prerequisites for only fixed and only mobile broadband (number)



In order to improve accessibility to services requiring great capacity throughout Sweden, it is also important to increase capacity in the mobile networks by stimulating fibring further out into the network. In pace with demand for capacity increasing and new technology in mobile networks being launched (such as HSPA+ and LTE⁴⁹), greater demands are also being placed on capacity further back in the network, for which reason the need of fibre-based transmission to base stations close to the end users will probably increase. In order for such a build-out to take place it is, however, necessary to have a functional wholesale market for dark fibre. PTS does not currently govern the market for dark fibre, but during 2008 the agency conducted a study of the wholesale market for dark fibre in Sweden with the aim of describing this market, the problems that exist and how these may be resolved.⁵⁰ In order to resolve the problems prevailing in the wholesale dark fibre market, PTS considers, among other things, that it is important to provide better access to the existing infrastructure and also that better preconditions are created to establish the infrastructure that is required, and that impediments to establishment in the market be minimised so that the market will be able to cope with the developments on its own. As regards current impediments to

⁴⁹ LTE stands for 'Long Term Evolution.'

⁵⁰ PTS-ER-2008:9.

establishment, PTS considers that they could be reduced by the municipalities encouraging joint laying, good IT infrastructure planning and an establishment-friendly approach to both fibre rollout and to competition for the same.⁵¹

New developments in technology and demand for capacity also require that frequency space is sufficient for the operators to be able to offer mobile broadband in areas where coverage is limited or absent. The board of PTS decided on 13 March how the frequencies in the 900 band would be assigned. This decision aimed, among other things, to enhance competition in the market for mobile broadband and provide better broadband coverage.⁵² Currently, PTS also plans to allocate the frequencies in the 800 MHz band, which among other things could possibly be used to ensure accessibility to rapid broadband in areas that completely lack or have inadequate access to IT infrastructure with high transmission capacity.⁵³

5.5 Effects on security and privacy

The trend towards increasing cloud computing can result in new security risks and weaker protection of personal privacy. As regards a business, this may entail risks with transferring critical data to some third party and a failure of control over where data is stored and processed. However, there are extensive economies of scale as regards storage and processing of data, and therefore it is reasonable that the development towards cloud computing will also entail considerable volumes of information being stored in a fewer number of large server halls. Sabotage of such halls or operational disruptions in the areas where the halls are localised might then possibly have major global consequences. On 6 to 7 May 2009, PTS conducted the exercise 'Telö 09', which was based on occurrences that influence the networks for electronic communications and other parts of society, for example severe disruptions to the Internet and physical impact on the infrastructure. The overall objective of Telö 09 was that the stakeholders participating in the sector for electronic communications would become better at, in collaboration, dealing with serious and extensive interruptions, interference and disruptions.

Private individuals may jeopardise their personal privacy by disclosing details to social networks via the Internet, as it may be difficult to check or eradicate information that has been published on the networks. There are also cases where private individuals have been exposed to breaches of data secrecy, normally via unprotected wireless networks. However, increasing amounts of data are being transmitted via wireless networks and therefore it is becoming

⁵¹ PTS-ER-2008:9, pp. 65-66.

⁵² Decision, 900 MHz band, PTS File reference 08-12019, p. 5.

⁵³ The licences will be allocated by an auction during the autumn of 2010.

increasingly important to protect oneself from undesirable intrusion. In the report 'Improving the security of wireless communications',⁵⁴ PTS provides a number of items of concrete advice about what is important to consider in this context.

⁵⁴ PTS-ER-2009:16.

6 Report tables

6.1 Electronic communications

Table 4 Electronic communications - revenues from end-user (SEKm)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total retail revenues										49 849	50 515	50 568	50 021	49 589	48 849	50 035	49 503
Fixed call services (excl. dial-up access)	18 000	19 100	19 456	20 438	21 343	22 366	23 294	23 729	24 495	24 628	23 563	23 458	22 549	20 928	19 035	17 942	16 412
Mobile call services	3 000	3 400	4 342	6 047	7 424	8 420	10 741	12 658	13 789	15 137	15 346	14 838	14 458	15 124	15 175	16 754	16 635
Internet service					348	920	1 699	2 311	3 548	4 555	5 360	5 763	6 697	7 250	8 050	8 337	8 588
Data communications services										4 419	4 832	4 637	4 349	4 226	4 213	4 030	4 006
Mobil data traffic										0	14	22	150	326	602	965	1 696
SMS									619	1 111	1 401	1 849	1 790	1 668	1 664	1 898	2 024
MMS													29	67	110	109	142
Annual growth [1] - total											1%	0%	-1%	-1%	-1%	2%	-1%
Fixed call services (excl. dial-up access)		6%	2%	5%	4%	5%	4%	2%	3%	1%	-4%	0%	-4%	-7%	-9%	-6%	-9%
Mobile call services		13%	28%	39%	23%	13%	28%	18%	9%	10%	1%	-3%	-3%	5%	0%	10%	-1%
Internet service						164%	85%	36%	54%	28%	18%	8%	16%	8%	11%	4%	3%
Data communications services											9%	-4%	-6%	-3%	0%	-4%	-1%
Mobil data traffic											5637%	60%	583%	117%	85%	60%	76%
SMS										80%	26%	32%	-3%	-7%	0%	14%	7%
MMS														132%	64%	-1%	30%

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The annual growth relates to a comparison between the current period and the corresponding period in the previous year.

Table 5 Electronic communications - traffic from end-user (millions of minutes)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total number of traffic minutes									58 762	60 385	55 657	53 473	51 984	49 663	45 944	44 776	43 642
Fixed call services (excl. dial-up access)									37 311	36 654	34 834	33 512	32 653	31 744	28 657	26 822	24 673
Dial-up access to the Internet									16 430	18 202	14 541	13 222	11 712	7 995	4 645	2 323	891
Mobile call services								3 988	5 021	5 529	6 283	6 739	7 619	9 924	12 642	15 631	18 078
Annual growth [1] - total										3%	-8%	-4%	-3%	-4%	-7%	-3%	-3%
Annual growth - fixed call services (excl. dial-up access)										-2%	-5%	-4%	-3%	-3%	-10%	-6%	-8%
Annual growth - dial-up access to the Internet										11%	-20%	-9%	-11%	-32%	-42%	-50%	-62%
Annual growth - mobile call services									26%	10%	14%	7%	13%	30%	27%	24%	16%
Proportion mobile traffic of total traffic (incl. dial-up access)									8.5%	9.2%	11.3%	12.6%	14.7%	20.0%	27.5%	34.9%	41.4%
Proportion mobile traffic of total traffic									11.9%	13.1%	15.3%	16.7%	18.9%	23.8%	30.6%	36.8%	42.3%

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The annual growth relates to a comparison between the current period and the corresponding period in the previous year.

Table 6 Revenues from an average household - consumption of electronic communications

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Revenue per month from an average household [1]									434	490	495	517	525	530	535	562	566
Fixed call services (excl. dial-up access)									263	278	264	270	265	246	229	216	197
Internet access (incl. dial-up access)									43	53	66	74	89	99	114	124	128
Mobile call services									118	141	143	142	141	155	160	185	192
Mobil data traffic										0	0	0	1	2	4	7	17
SMS									10	18	22	30	29	26	26	28	30
MMS													0	1	2	2	2
Annual growth [2]										13%	1%	4%	2%	1%	1%	5%	1%
Fixed call services (excl. dial-up access)										6%	-5%	2%	-2%	-7%	-7%	-6%	-9%
Internet access (incl. dial-up access)										24%	25%	11%	20%	12%	15%	8%	3%
Mobile call services										20%	1%	0%	-1%	10%	3%	16%	4%
Mobil data traffic											476%	628%	1263%	81%	76%	73%	142%
SMS										85%	24%	37%	-5%	-10%	-1%	10%	5%
MMS														123%	77%	-4%	32%
Proportion fixed call services (excl. dial-up access)									61%	57%	53%	52%	50%	46%	43%	38%	35%
Proportion Internet access (incl. dial-up access)									10%	11%	13%	14%	17%	19%	21%	22%	23%
Proportion mobile call services, SMS, MMS and mobile data traffic									29%	32%	33%	33%	33%	35%	36%	39%	43%

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The average value is computed by using data from Statistics Sweden (SCB) on the number of housekeeping units and are exclusive VAT.

[2] The annual growth relates to a comparison between the current period and the corresponding period in the previous year.

Table 7 Fixed call services - number of fixed telephony subscriptions and end-users (thousands) [1] (PSTN, ISDN and IP-based telephony)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Subscriptions for fixed telephony - via PSTN [2]						5 890	5 786	5 667	5 584	5 497	5 403	5 237	4 987	4 745	4 466
Private							4 517	4 429	4 381	4 435	4 353	4 048	3 860	3 611	3 331
Business							1 269	1 238	1 202	1 062	1 049	1 189	1 126	1 134	1 135
Subscriptions for fixed telephony - via ISDN [3]	6	13	31	63	119	203	270	286	265	245	204	179	154	138	122
Private					11.5	26.5	50.0	60.5	49.5	39.5	32.0	10.0	4.8	3.4	2.1
Business	6	13	31	63	107	176	220	226	216	205	172	169	150	135	120
Subscriptions for fixed telephony - via IP [4]									1	38	81	219	410	623	735
Private									1	38	79	213	392	588	705
Business									0	1	2	8	17	34	30
via xDSL access										1	15	55	100	156	199
via cable television access											2	77	180	295	320
via LAN network access [5]									1	37	57	74	111	132	162
via other form of access									0	7	14	14	19	39	54
Subscriptions for fixed telephony - total						6 093	6 056	5 954	5 849	5 780	5 688	5 635	5 551	5 506	5 323
Private							4 567	4 490	4 431	4 512	4 465	4 271	4 258	4 203	4 038
Business							1 489	1 464	1 418	1 268	1 223	1 366	1 293	1 303	1 285
of which via WLR [6]												854	1 011	1 023	1 004
Private												810	899	873	820
Business												44	112	150	184
of which active pre-selection customers [7]						866	1 135	1 558	1 946	2 101	1 990	1 048	850	513	337
Private						735	983	1 396	1 772	1 919	1 798	838	608	337	207
Business						131	152	162	174	182	191	210	243	176	130

Source: National Post and Telecom Agency (PTS), June 2009.

Table 7 – Continuation from previous page.

[1] The distribution between private and business has been revised by TeliaSonera for 2005, whereby comparability with previous periods has been restricted.

[2] A PSTN subscription is equivalent to a main line to own end-user where subscriptions for analogue telephony are supplied. The operator that has customers with subscriptions usually owns the main line or leases the main line from a network operator (for example by full or shared access) or buys Wholesale Line Rental (WLR). An indirectly connected customer, i.e. pre-selection customer or prefix customer, is not included here.

[3] An ISDN subscription is equivalent to a main line to own end-user comprising either basic rate or primary rate ISDN. The operator that has customers with subscriptions usually owns the main line or leases the main line from a network operator or buys Wholesale Line Rental (WLR). An indirectly connected customer, i.e. pre-selection customer or prefix customer, is not included here.

[4] This relates to the form of IP-based telephony where an ordinary telephone is linked to a broadband connection via, for example, a terminal adapter. Alternatively, an IP telephone or the corresponding is used, which is linked directly to a broadband connection. PBXs that are connected via IP protocol should also be included. A telephone call that is made by a subscriber for IP telephony should be able to reach, and be reached by, telephones connected to the PSTN and ISDN networks.

[5] LAN network means a fixed connection which is reached via a LAN (local network, property network) usually based on Ethernet technology. The LAN is linked to a public fibre network, for example an area network. The LAN (which may comprise optic fibre cable or copper-based cable) links the individual dwellings/operations with a centrally located data switch in the premises, which in its turn is connected with the routers available in the area and backbone networks.

[6] Wholesale Line Rental. Refers to distribution under agreements concluded with TeliaSonera both prior to and after 18 May 2005.

[7] Relates to active pre-selection customers where the customer is indirectly connected. Active means that the customer has made at least one call during the quarter preceding the measurement period in question. Note that if a customer has different pre-selections for national calls and international calls, this only corresponds to one customer. Corresponds to the English term 'Carrier PreSelect' (CPS). Relates to pre-selection for both PSTN and ISDN.

6.2 Fixed call services

Table 8 Fixed call services - revenues (SEKm) from end-user [1] (PSTN, ISDN and IP-based telephony)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Revenues for fixed call services - private							15 519	16 407	15 569	15 568	15 189	13 941	12 709	11 852	10 688
Fixed charges							5 608	6 054	5 705	5 836	5 766	5 733	5 314	5 092	4 844
<i>of which subscription charges [2]</i>							5 265	5 910	5 552	5 553	5 477	5 351	5 082	4 889	4 550
<i>of which other fixed charges [3]</i>							343	145	153	283	288	381	232	202	294
National calls from fixed networks to fixed networks							5 809	5 583	5 151	4 785	4 473	3 623	3 176	2 875	2 434
of which telephone calls							4 064	3 828	3 691	3 502	3 266	2 813	2 675	2 621	2 311
of which dial-up access to the Internet [4]							1 745	1 755	1 459	1 283	1 207	810	500	254	123
Calls from fixed networks to mobile networks							2 420	2 800	2 841	3 047	3 116	2 811	2 494	2 147	1 783
International calls							953	784	775	780	783	740	661	694	692
Other [5]							729	1 186	1 098	1 119	1 050	1 034	1 064	1 044	935
Revenues for fixed call services - business							10 526	10 131	9 703	9 479	8 774	7 956	6 906	6 369	5 859
Fixed charges							3 403	2 895	2 733	2 680	2 613	2 615	2 481	2 450	2 677
<i>of which subscription charges [2]</i>							3 136	2 671	2 607	2 466	2 438	2 435	2 324	2 248	2 407
<i>of which other fixed charges [3]</i>							267	224	127	215	175	180	157	202	270
National calls from fixed networks to fixed networks							2 990	3 155	2 557	2 359	1 823	1 572	1 184	986	754
of which telephone calls							2 385	2 500	2 114	1 969	1 557	1 412	1 105	961	743
of which dial-up access to the Internet [4]							605	654	442	390	266	159	79	25	11
Calls from fixed networks to mobile networks							2 469	2 538	2 759	2 708	2 481	2 252	1 919	1 755	1 500
International calls							930	647	665	594	524	440	351	314	253
Other [5]							735	896	989	1 138	1 332	1 078	971	864	675

Table 8 – Continuation from previous page.

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total revenues for fixed call services	19 456	20 438	21 621	23 102	24 644	25 529	26 044	26 537	25 272	25 047	23 963	21 898	19 615	18 221	16 546
Fixed charges	7 146	7 339	7 639	7 911	8 621	8 794	9 010	8 949	8 438	8 517	8 379	8 347	7 795	7 542	7 521
of which subscription charges [2]							8 401	8 580	8 159	8 019	7 915	7 786	7 406	7 138	6 956
of which other fixed charges [3]							609	369	279	498	464	561	388	404	565
National calls from fixed networks to fixed networks	6 300	6 704	7 249	7 681	8 100	8 450	8 799	8 737	7 707	7 145	6 297	5 195	4 360	3 860	3 188
of which telephone calls	6 300	6 704	6 971	6 945	6 750	6 650	6 449	6 328	5 806	5 471	4 823	4 226	3 780	3 582	3 054
of which dial-up access to the Internet [4]			278	736	1 350	1 800	2 349	2 409	1 902	1 673	1 474	969	580	279	134
Calls from fixed networks to mobile networks	1 431	2 044	2 555	3 500	4 081	4 500	4 889	5 338	5 600	5 755	5 597	5 063	4 413	3 902	3 283
International calls	3 650	3 415	3 178	2 695	2 477	2 370	1 883	1 431	1 439	1 373	1 307	1 180	1 012	1 008	945
Other [5]	929	936	1 000	1 315	1 365	1 415	1 464	2 082	2 086	2 257	2 383	2 112	2 035	1 908	1 610

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The distribution between private and business has been revised by TeliaSonera for 2005, whereby comparability with previous periods has been restricted.

IP telephony relates to the form where an ordinary telephone is linked to a broadband connection via, for example, a terminal adapter. Alternatively, an IP telephone or the corresponding is used, which is linked directly to a broadband connection. PBXs that are connected via IP protocol should also be included.

A telephone call that is made by a subscriber for IP telephony should be able to reach, and be reached by, telephones connected to the PSTN and ISDN networks.

[2] Excluding subscription charges for xDSL, fixed charges for value-added services and supplementary services.

[3] Installation charges, transfer charges, number portings, etc.

[4] Calls to dial-up Internet are dial-up access to the Internet via either a PSTN modem or an ISDN modem.

[5] Relates to calls from payphones, directory inquiry services (118 XYZ), free-phone (020-), calls with shared cost (077-), pay telecom services and mass call services (071-, 072-, 0900-, 0939- and 0944-), value-added services and supplementary services. Revenues that are payable to third parties are excluded.

Table 9 Fixed call services - percentage distribution of revenues from end-user [1] (PSTN, ISDN and IP-based telephony)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Revenues for fixed telephony - private							100%	100%	100%	100%	100%	100%	100%	100%	100%
Fixed charges [2]							36%	37%	37%	37%	38%	41%	42%	43%	45%
National calls from fixed networks to fixed networks [3]							37%	34%	33%	31%	29%	26%	25%	24%	23%
Calls from fixed networks to mobile networks							16%	17%	18%	20%	21%	20%	20%	18%	17%
International calls							6%	5%	5%	5%	5%	5%	5%	6%	6%
Other [4]							5%	7%	7%	7%	7%	7%	8%	9%	9%
Revenues for fixed telephony - business							100%	100%	100%	100%	100%	100%	100%	100%	100%
Fixed charges [2]							32%	29%	28%	28%	30%	33%	36%	38%	46%
National calls from fixed networks to fixed networks [3]							28%	31%	26%	25%	21%	20%	17%	15%	13%
Calls from fixed networks to mobile networks							23%	25%	28%	29%	28%	28%	28%	28%	26%
International calls							9%	6%	7%	6%	6%	6%	5%	5%	4%
Other [4]							7%	9%	10%	12%	15%	14%	14%	14%	12%
Total revenues for fixed telephony	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fixed charges [2]	37%	36%	35%	34%	35%	34%	35%	34%	33%	34%	35%	38%	40%	41%	45%
National calls from fixed networks to fixed networks [3]	32%	33%	34%	33%	33%	33%	34%	33%	30%	29%	26%	24%	22%	21%	19%
Calls from fixed networks to mobile networks	7%	10%	12%	15%	17%	18%	19%	20%	22%	23%	23%	23%	22%	21%	20%
International calls	19%	17%	15%	12%	10%	9%	7%	5%	6%	5%	5%	5%	5%	6%	6%
Other [4]	5%	5%	5%	6%	6%	6%	6%	8%	8%	9%	10%	10%	10%	10%	10%

Source: National Post and Telecom Agency (PTS), June 2009.

Table 9 – Continuation from previous page.

[1] The distribution between private and business has been revised by TeliaSonera for 2005, whereby comparability with previous periods has been restricted.

IP telephony relates to the form where an ordinary telephone is linked to a broadband connection via, for example, a terminal adapter. Alternatively, an IP telephone or the corresponding is used, which is linked directly to a broadband connection. PBXs that are connected via IP protocol should also be included.

A telephone call that is made by a subscriber for IP telephony should be able to reach, and be reached by, telephones connected to the PSTN and ISDN networks.

[2] Excluding subscription charges for xDSL, fixed charges for value-added services and supplementary services.

[3] Does not include calls from/with pre-paid telephone cards from payphones (both national and international calls), emergency calls, calls with shared cost (077-), directory inquiry services (118 XYZ), free-phone (020-), pay telecom services and mass call services (0900-, 0939- , 0944- and 099-), value-added services and supplementary services

[4] Relates to calls from payphones, directory inquiry services (118 XYZ), freephone (020-), calls with shared cost (077-), pay telecom services and mass call services (071-, 072-, 0900-, 0939- and 0944-), value-added services and supplementary services.

Revenues that are payable to third parties are excluded.

Table 10 Fixed call services - number of outgoing traffic minutes (millions) from end-user [1] (PSTN, ISDN and IP-based telephony)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of outgoing traffic minutes for fixed call services - private [2]							36 399	36 947	34 054	32 293	31 190	28 113	23 280	19 571	16 368
National calls from fixed networks to fixed networks							34 714	34 933	31 864	30 026	28 629	25 650	20 859	17 070	13 953
of which telephone calls							21 301	20 996	20 429	19 391	19 134	18 958	17 027	15 250	13 339
of which dial-up access to the Internet [3]							13 412	13 937	11 435	10 635	9 494	6 692	3 832	1 820	615
Calls from fixed networks to mobile networks							1 180	1 477	1 656	1 691	1 935	1 824	1 797	1 668	1 631
International calls							504	537	533	576	626	638	624	833	784
Number of outgoing traffic minutes for fixed call services - business [2]							17 342	17 909	15 321	14 441	13 175	11 626	10 022	9 574	9 195
National calls from fixed networks to fixed networks							15 403	15 709	13 094	12 135	10 821	9 192	7 624	6 969	6 451
of which telephone calls							12 385	11 443	9 988	9 548	8 602	7 890	6 811	6 465	6 175
of which dial-up access to the Internet [3]							3 018	4 265	3 105	2 587	2 218	1 303	813	504	276
Calls from fixed networks to mobile networks							1 353	1 601	1 604	1 720	1 793	1 883	1 932	2 163	2 233
International calls							587	600	623	586	562	551	467	442	512
Total number of outgoing traffic minutes for fixed call services [2]							53 741	54 856	49 374	46 734	44 365	39 739	33 302	29 145	25 564
National calls from fixed networks to fixed networks							50 117	50 642	44 958	42 161	39 449	34 843	28 483	24 039	20 404
of which telephone calls							33 687	32 440	30 417	28 939	27 737	26 848	23 838	21 715	19 513
of which dial-up access to the Internet [3]							16 430	18 202	14 541	13 222	11 712	7 995	4 645	2 323	891
Calls from fixed networks to mobile networks							2 533	3 078	3 260	3 411	3 728	3 707	3 729	3 831	3 863
International calls							1 091	1 137	1 156	1 162	1 188	1 189	1 090	1 275	1 296

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The distribution between private and business has been revised by TeliaSonera for 2005, whereby comparability with previous periods has been restricted.

IP telephony relates to the form where an ordinary telephone is linked to a broadband connection via, for example, a terminal adapter. Alternatively, an IP telephone or the corresponding is used, which is linked directly to a broadband connection. PBXs that are connected via IP protocol should also be included.

A telephone call that is made by a subscriber for IP telephony should be able to reach, and be reached by, telephones connected to the PSTN and ISDN networks.

[2] Does not include calls from/with pre-paid telephone cards from payphones (both national and international calls), emergency calls, calls with shared cost (077-), directory inquiry services (118 XYZ), free-phone (020-), pay telecom services and mass call services (0900-, 0939-, 0944- and 099-), value-added services and supplementary services.

[3] Calls to dial-up Internet are dial-up access to the Internet via either a PSTN modem or an ISDN modem.

Table 11 Fixed call services - average revenue from fixed telephony [1] per traffic minute and per customer

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Average revenue per traffic minute - private [2]							0.43	0.44	0.46	0.48	0.49	0.50	0.55	0.61	0.65
National calls from fixed networks to fixed networks							0.17	0.16	0.16	0.16	0.16	0.14	0.15	0.17	0.17
<i>Only telephone calls</i>							0.19	0.18	0.18	0.18	0.17	0.15	0.16	0.17	0.17
<i>Only dial-up access to the Internet [3]</i>							0.11	0.13	0.12	0.12	0.13	0.12	0.13	0.14	0.20
Calls from fixed networks to mobile networks							2.05	1.90	1.72	1.80	1.61	1.54	1.39	1.29	1.09
International calls							1.89	1.46	1.45	1.35	1.25	1.16	1.06	0.83	0.88
Average revenue per traffic minute - business [2]							0.61	0.57	0.63	0.66	0.67	0.68	0.69	0.67	0.64
National calls from fixed networks to fixed networks							0.19	0.20	0.20	0.19	0.17	0.17	0.16	0.14	0.12
<i>Only telephone calls</i>							0.19	0.22	0.21	0.21	0.18	0.18	0.16	0.15	0.12
<i>Only dial-up access to the Internet [3]</i>							0.19	0.15	0.14	0.15	0.12	0.12	0.10	0.05	0.04
Calls from fixed networks to mobile networks							1.83	1.59	1.72	1.57	1.38	1.20	0.99	0.81	0.67
International calls							1.59	1.08	1.07	1.01	0.93	0.80	0.75	0.71	0.49
Average revenue per traffic minute - total [2]							0.48	0.48	0.51	0.54	0.54	0.55	0.59	0.63	0.65
National calls from fixed networks to fixed networks							0.18	0.17	0.17	0.17	0.16	0.15	0.15	0.16	0.16
<i>Only telephone calls</i>							0.19	0.19	0.19	0.19	0.17	0.16	0.16	0.16	0.16
<i>Only dial-up access to the Internet [3]</i>							0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.15
Calls from fixed networks to mobile networks							1.93	1.73	1.72	1.69	1.50	1.37	1.18	1.02	0.85
International calls							1.73	1.26	1.24	1.18	1.10	0.99	0.93	0.79	0.73
Average revenue per fixed network customer and month [4]							357	368	357	359	348	322	292	275	255
Private							563	302	291	290	282	266	248	233	216
Business							1 053	572	561	588	587	512	433	409	377

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The distribution between private and business has been revised by TeliaSonera for 2005, whereby comparability with previous periods has been restricted.

[2] Average revenue = the revenues of the period per respective fixed telephony service divided by the total number of traffic minutes per customer for the respective service during the period.

[3] Excl. Subscription charges for dial-up access to the Internet. Calls to dial-up Internet are dial-up access to the Internet via either a PSTN modem or an ISDN modem.

[4] Average revenue per fixed customer and month = the revenues of the period for fixed call services divided by the average number of customers for fixed call services.

Table 12 Fixed call services - number of outgoing telephone calls (millions) from end-user [1] (PSTN, ISDN and IP-based telephony)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of outgoing calls for fixed call services - private [2]									6 038		5 159	4 681	4 082	3 649	3 043
National calls from fixed networks to fixed networks									5 955		3 940	3 590	3 101	2 728	2 253
<i>of which telephone calls</i>											3 514	3 307	2 932	2 645	2 219
<i>of which dial-up access to the Internet [3]</i>											427	283	169	83	34
Calls from fixed networks to mobile networks											1 039	991	882	817	696
International calls									83		89	85	90	83	75
Free-phone (020-)											91	15	10	22	20
Number of outgoing calls for fixed call services - business [2]									5 212		4 233	4 126	3 695	3 580	3 263
National calls from fixed networks to fixed networks									5 041		3 066	2 866	2 510	2 395	2 115
<i>of which telephone calls</i>											2 935	2 765	2 428	2 328	2 069
<i>of which dial-up access to the Internet [3]</i>											131	101	82	67	46
Calls from fixed networks to mobile networks											842	908	907	957	925
International calls									171		166	186	144	132	128
Free-phone (020-)											160	166	134	96	96
Total number of outgoing calls for fixed call services [2]									11 249		9 392	8 806	7 778	7 229	6 306
National calls from fixed networks to fixed networks									10 995		7 006	6 456	5 611	5 123	4 368
<i>of which telephone calls</i>											6 448	6 072	5 360	4 973	4 288
<i>of which dial-up access to the Internet [3]</i>											558	384	251	150	80
Calls from fixed networks to mobile networks											1 881	1 899	1 789	1 774	1 621
International calls									254		254	271	234	215	202
Free-phone (020-)											250	180	143	118	115

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The distribution between private and business has been revised by TeliaSonera for 2005, whereby comparability with previous periods has been restricted.

[2] Does not include calls from/with pre-paid telephone cards from payphones (both national and international calls), emergency calls, calls with shared cost (077-), directory inquiry services (118 X value-added services and

[3] Calls to dial-up Internet are dial-up access to the Internet via either a PSTN modem or an ISDN modem.

Table 13 Fixed call services - average length of call and average number of calls [1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Average length of call in minutes - private [2]									5.6		6.0	6.0	5.7	5.3	5.3
National calls from fixed networks to fixed networks											7.3	7.1	6.7	6.3	6.2
<i>Only telephone calls</i>											5.5	5.7	5.8	5.8	6.0
<i>Only dial-up access to the Internet [3]</i>											21.6	23.6	22.7	21.9	18.0
Calls from fixed networks to mobile networks											1.9	1.8	2.0	2.0	2.3
International calls									6.4		7.0	7.2	6.6	7.8	8.2
Free-phone (020-)											0.1	2.2	5.7	4.1	4.0
Average length of call in minutes - business [2]									3.3		3.4	3.0	2.9	2.8	3.0
National calls from fixed networks to fixed networks											3.5	3.2	3.0	2.9	3.1
<i>Only telephone calls</i>											3.0	2.9	2.8	2.8	3.0
<i>Only dial-up access to the Internet [3]</i>											16.3	12.9	9.9	7.5	6.0
Calls from fixed networks to mobile networks											2.1	2.1	2.1	2.3	2.4
International calls									3.6		3.4	3.0	3.2	3.3	4.0
Free-phone (020-)											8.9	5.3	5.2	4.7	4.7
Average length of call in minutes - total [2]									4.5		4.9	4.6	4.4	4.1	4.1
National calls from fixed networks to fixed networks											5.6	5.4	5.1	4.7	4.7
<i>Only telephone calls</i>											4.4	4.4	4.4	4.4	4.6
<i>Only dial-up access to the Internet [3]</i>											20.3	20.8	18.5	15.5	11.1
Calls from fixed networks to mobile networks											2.0	2.0	2.1	2.2	2.4
International calls									4.6		4.7	4.3	4.5	5.0	5.6
Free-phone (020-)											5.7	5.0	5.2	4.6	4.6
Average number of calls per fixed network customer and month [4]									159		136	130	116	109	97
Private									113		96	89	80	72	62
Business									301		283	266	232	230	210

Source: National Post and Telecom Agency (PTS), June 2009.

Table 13 – Continuation from previous page.

[1] The distribution between private and business has been revised by TeliaSonera for 2005, whereby comparability with previous periods has been restricted.

[2] Does not include calls from/with pre-paid telephone cards from payphones (both national and international calls), emergency calls, calls with shared cost (077-), directory inquiry services (118 X value-added services and

[3] Calls to dial-up Internet are dial-up access to the Internet via either a PSTN modem or an ISDN modem.

[4] Average number of calls per fixed customer and month = the calls of the period for fixed call services divided by the average number of customers for fixed call services.

Table 14 Fixed call services - interconnection in fixed networks

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total interconnection revenues fixed telephony (SEKm)								2 515	2 646	2 782	2 443	2 223	2 044	1 773	1 609
Total interconnection for fixed telephony (millions of minutes)								29 253	33 839	34 017	37 367	32 333	27 917	26 218	20 377
Average revenue per interconnection minute (SEK)								0.086	0.078	0.082	0.065	0.069	0.073	0.068	0.079

Source: National Post and Telecom Agency (PTS), June 2009.

6.3 Mobile call and data services

Table 15 Mobile call services and mobile data - number of contract subscriptions and pre-paid cards[1] (thousands)

	31 dec. 1994	31 dec. 1995	31 dec. 1996	31 dec. 1997	31 dec. 1998	31 dec. 1999	31 dec. 2000	31 dec. 2001	31 dec. 2002	31 dec. 2003	31 dec. 2004	31 dec. 2005	31 dec. 2006	31 dec. 2007	31 dec. 2008
All subscriptions and active pre-paid cards [1]	1 381	2 008	2 492	3 169	4 109	5 126	6 372	7 178	7 949	8 801	8 785	9 104	9 607	10 117	10 988
Private						4 033	5 073	5 805	6 543	7 271	7 056	7 340	7 716	8 068	8 662
Business						1 093	1 299	1 373	1 406	1 531	1 728	1 764	1 891	2 049	2 326
of which subscriptions for only mobile packet data [2]													92	376	877
Private													26	228	591
Business													65	148	287
of which via [3]															
GSM	422	1 033	1 571	2 414	3 605	4 836	6 191	7 034	7 812	8 669	8 659	8 983	8 278	7 752	7 437
UMTS and CDMA 2000													1 214	2 258	3 550
NMT	959	975	921	755	503	290	181	144	137	132	126	120	114	107	0
of which contract subscriptions	422	1 033	1 571	2 179	2 589	2 853	3 419	3 498	3 503	3 667	4 030	4 345	4 800	5 514	6 570
of which pre-paid cards [1]				235	1 016	1 983	2 773	3 536	4 309	5 003	4 629	4 638	4 693	4 496	4 417

Source: National Post and Telecom Agency (PTS), June 2009.

[1] This series was discontinued in 2004 as PTS then transferred to a three-month rule regarding how long a pre-paid card should be deemed to be active.

Pre-paid card only means pre-paid cards that have been topped up, or through which calls have been received or made or have in another way generated revenues during a given period. The length of this period varies depending on operator. For the first half-year 2004 and earlier TeliaSonera uses 12 months, Tele2 uses 13 months and Vodafone (Telenor) uses 6 months. All pre-paid cards are defined as private owing to the difficulty in verifying whether the buyer is a private customer or a business customer.

[2] Active UMTS subscriptions are defined as subscriptions where the user has actively used services in the UMTS network.

Includes subscriptions that are mainly used for mobile packet data and where the data access has been used at least once during the fourth quarter of 2008 or where subscription charges have been paid during the fourth quarter of 2008.

[3] For an UMTS- or CDMA 2000 subscription to be considered as active, it must have generated traffic (minutes or data) in UMTS or CDMA 2000 networks during the fourth quarter of 2008. All other subscriptions are considered to be GSM.

Table 16 Mobile call services and mobile data - percentage distribution - number of contract subscriptions and pre-paid cards

	31 dec. 1994	31 dec. 1995	31 dec. 1996	31 dec. 1997	31 dec. 1998	31 dec. 1999	31 dec. 2000	31 dec. 2001	31 dec. 2002	31 dec. 2003	31 dec. 2004	31 dec. 2005	31 dec. 2006	31 dec. 2007	31 dec. 2008
All subscriptions and active pre-paid cards [1]	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Private						79%	80%	81%	82%	83%	80%	81%	80%	80%	79%
Business						21%	20%	19%	18%	17%	20%	19%	20%	20%	21%
of which subscriptions for only mobile packet data [2]													100%	100%	100%
Private													29%	61%	67%
Business													71%	39%	33%
of which via [3]															
GSM	31%	51%	63%	76%	88%	94%	97%	98%	98%	99%	99%	99%	86%	77%	68%
UMTS and CDMA 2000													13%	22%	32%
NMT	69%	49%	37%	24%	12%	6%	3%	2%	2%	1%	1%	1%	1%	1%	0%
of which contract subscriptions	31%	51%	63%	69%	63%	56%	54%	49%	44%	42%	46%	48%	50%	55%	60%
of which pre-paid cards [1]				7%	25%	39%	44%	49%	54%	57%	53%	51%	49%	44%	40%
Number of subscriptions per 1000 inhabitants [4]	157	227	282	358	464	578	717	806	889	981	975	1 006	1 054	1 102	1 187

Source: National Post and Telecom Agency (PTS), June 2009.

[1] This series was discontinued in 2004 as PTS then transferred to a three-month rule regarding how long a pre-paid card should be deemed to be active.

Pre-paid card only means pre-paid cards that have been topped up, or through which calls have been received or made or have in another way generated revenues during a given period. The length of this period varies depending on operator. For the first half-year 2004 and earlier TeliaSonera uses 12 months, Tele2 uses 13 months and Vodafone (Telenor) uses 6 months. All pre-paid cards are defined as private owing to the difficulty in verifying whether the buyer is a private customer or a business customer.

[2] Active UMTS subscriptions are defined as subscriptions where the user has actively used services in the UMTS network.

Includes subscriptions that are mainly used for mobile packet data and where the data access has been used at least once during the fourth quarter of 2008 or where subscription charges have been paid during the fourth quarter of 2008.

[3] For an UMTS- or CDMA 2000 subscription to be considered as active, it must have generated traffic (minutes or data) in UMTS or CDMA 2000 networks during the fourth quarter of 2008. All other subscriptions are considered to be inactive.

[4] When computing the number of subscriptions per 1000 inhabitants, population statistics from SCB have been used. The value, as computed here, does not take into account whether the subscriber has more than one subscription, nor whether the subscription is a private or a business subscription.

Table 17 Mobile call services and mobile data - growth in number of contract subscriptions and pre-paid cards [1] (thousands)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Net growth - All subscriptions and active pre-paid cards [1]		627	484	677	940	1 017	1 246	805	771	853	-17	319	503	510	871
Private						4 033	1 040	732	738	728	-214	283	376	352	594
Business						1 093	206	74	33	125	198	36	127	158	277
Net growth - of which subscriptions for only mobile packet data [2]													92	284	501
Private													26	202	362
Business													65	82	139
Net growth - subscriptions via [3]															
GSM		611	538	843	1 191	1 230	1 356	842	778	858	-11	325	-705	-526	-315
UMTS and CDMA 2000													1 214	1 044	1 292
NMT		16	-54	-166	-252	-213	-109	-37	-7	-5	-6	-6	-6	-8	-107
Net growth - contract subscriptions		611	538	608	410	263	566	79	5	164	363	315	455	714	1 057
Net growth - pre-paid cards [1]				235	781	967	790	763	773	694	-374	10	54	-196	-79
Total annual growth in per cent		45.4%	24.1%	27.2%	29.7%	24.8%	24.3%	12.6%	10.7%	10.7%	-0.2%	3.6%	5.5%	5.3%	8.6%
Aggregated percentage growth in relation to 1994		45.4%	80.4%	129.5%	197.5%	271.2%	361.4%	419.8%	475.6%	537.3%	536.1%	559.2%	595.6%	632.6%	695.6%

Source: National Post and Telecom Agency (PTS), June 2009.

[1] This series was discontinued in 2004 as PTS then transferred to a three-month rule regarding how long a pre-paid card should be deemed to be active.

Pre-paid card only means pre-paid cards that have been topped up, or through which calls have been received or made or have in another way generated revenues during a given period. The length of this period varies depending on operator. For the first half-year 2004 and earlier TeliaSonera uses 12 months, Tele2 uses 13 months and Vodafone (Telenor) uses 6 months. All pre-paid cards are defined as private owing to the difficulty in verifying whether the buyer is a private customer or a business customer.

[2] Active UMTS subscriptions are defined as subscriptions where the user has actively used services in the UMTS network.

Includes subscriptions that are mainly used for mobile packet data and where the data access has been used at least once during the fourth quarter of 2008 or where subscription charges have been paid during the fourth quarter of 2008.

[3] For an UMTS- or CDMA 2000 subscription to be considered as active, it must have generated traffic (minutes or data) in UMTS or CDMA 2000 networks during the fourth quarter of 2008. All other subscriptions are considered to be GSM.

Table 18 Mobile call services and mobile data - revenues (SEKm) from end-user [1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
All subscriptions (incl. revenues from SMS, MMS and mobile data traffic [2])	4 342	6 047	7 424	8 420	10 741	12 658	14 407	16 248	16 760	16 709	16 427	17 185	17 551	19 726	20 497
Private							6 699	8 397	8 792	9 130	9 063	9 826	10 176	11 878	12 962
Business							7 708	7 851	7 958	7 579	7 364	7 359	7 374	7 848	7 535
All subscriptions (excl. revenues from SMS, MMS and mobile data traffic [2])							13 789	15 137	15 346	14 838	14 458	15 124	15 175	16 754	16 625
Private							6 194	7 458	7 613	7 530	7 454	8 268	8 506	9 898	10 324
Business							7 594	7 679	7 732	7 308	7 004	6 856	6 669	6 856	6 300
Subscriptions - GSM, UMTS and CDMA 2000 (incl. revenues from SMS, MMS and mobile data traffic [2])							13 470	15 006	15 229	14 728	14 374	15 082	15 149	16 737	16 625
Private							6 120	7 418	7 575	7 500	7 431	8 255	8 497	9 892	10 324
Business							7 350	7 588	7 653	7 228	6 943	6 828	6 652	6 845	6 300
Pre-paid cards [3]							1 519	2 212	2 551	2 928	2 605	2 869	2 977	3 163	3 091
Contract subscriptions							11 951	12 794	12 678	11 799	11 768	12 213	12 171	13 574	13 534
Subscriptions - NMT	3 255	3 751	3 000	2 200	1 466	800	319	131	117	110	84	41	27	17	0
Private							172	75	40	38	30	13	9	6	0
Business							628	244	91	79	80	28	18	11	0

Source: National Post and Telecom Agency (PTS), june 2009.

[1] Excluding revenues from mobile value-added services, interconnection, international roaming and group internal revenues. Supplementary charges or other instalment payment for discounted mobile telephones are not included.

[2] Revenues from SMS, MMS and mobile data traffic are shown separately.

[3] All pre-paid cards are defined as private owing to the difficulty in verifying whether the buyer is a private customer or a business customer.

Table 19 Mobile call services and mobile data - average revenue per subscription and month [1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Average revenue - all subscriptions (incl. revenues from SMS, MMS and mobile data traffic [3])		297	275	248	246	228	209	200	185	166	156	160	156	167	162
Private							123	129	119	110	105	114	113	125	129
Business							537	490	477	430	377	351	336	332	287
Average revenue - all subscriptions (excl. revenues from SMS, MMS and mobile data traffic [3])							200	186	169	148	137	141	135	142	131
Private							113	114	103	91	87	96	94	105	103
Business							529	479	464	415	358	327	304	290	240
Average revenue - subscriptions - GSM, UMTS and CDMA 2000 (incl. revenues from SMS, MMS and mobile data traffic [3])							204	189	171	149	138	142	137	143	132
Private							116	116	104	92	88	97	95	106	103
Business							557	492	470	418	361	331	308	293	241
Pre-paid cards [2]							53	58	54	52	45	52	53	57	58
Contract subscriptions							318	308	302	274	255	243	222	219	187
Average revenue - Subscriptions - NMT		323	264	219	194	168	113	67	69	68	54	28	19	13	0
Private							45	30	29	23	19	11	8	6	0
Business							212	147	210	252	199	95	53	39	0

Source: National Post and Telecom Agency (PTS), june 2009.

[1] Excluding revenues from mobile value-added services, interconnection, international roaming and group internal revenues. Supplementary charges or other instalment payment for discounted mobile telephones are not included.

[2] All pre-paid cards are defined as private owing to the difficulty in verifying whether the buyer is a private customer or a business customer.

[3] Revenues from SMS, MMS and mobile data traffic are shown separately.

Table 20 Mobile call services and mobile data - number of outgoing traffic minutes (millions) from end-user

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Outgoing traffic from mobile telephone to national mobile network								2 733	3 291	4 059	4 585	6 738	9 127	11 506	13 266
of which within own network [1]								1 744	2 129	2 607	2 985	4 739	6 181	7 662	8 765
Private								1 312	1 718	2 041	2 483	4 240	5 805	7 494	8 341
Business								1 421	1 573	2 018	2 102	2 498	3 322	4 012	4 925
Outgoing traffic from mobile telephone to national fixed network								2 573	2 785	2 468	2 817	2 965	3 166	3 614	4 242
Private								1 103	1 244	1 099	1 237	1 359	1 544	1 772	1 900
Business								1 471	1 541	1 370	1 580	1 606	1 622	1 842	2 342
International outgoing traffic								223	207	212	217	221	349	512	570
Private								119	107	102	113	116	221	371	405
Business								104	100	110	104	105	128	141	165
Total number of outgoing traffic minutes						3 988	5 021	5 529	6 283	6 739	7 619	9 924	12 642	15 631	18 078
UMTS and CDMA2000											245	732	1 610	2 901	5 655
GSM [2]						3 797	4 941	5 476	6 236	6 698	7 342	9 171	11 020	12 721	12 423
NMT					317	191	80	53	47	41	32	21	13	9	0
Pre-paid cards [3]									1 370	1 488	1 704	2 751	3 476	3 907	4 259
Contract subscriptions									4 913	5 251	5 915	7 173	9 166	11 724	13 819
Private						1 521	2 190	2 534	3 069	3 242	3 833	5 715	7 570	9 637	10 646
Business						2 467	2 831	2 995	3 214	3 497	3 786	4 209	5 072	5 994	7 432
Average number of traffic minutes per mobile telephony subscription and month [4]							73	68	69	67	72	92	113	135	152
Private							40	39	41	39	45	66	84	103	112
Business							197	187	193	199	194	201	235	268	314

Source: National Post and Telecom Agency (PTS), june 2009.

Table 20 – Continuation from previous page.

[1] For service providers where network capacity is purchased from a mobile network operator, 'voice traffic' refers to voice traffic that terminates in the same mobile network to which the service provider is connected.

[2] Includes traffic from UMTS for 2003.

[3] All pre-paid cards are defined as private owing to the difficulty in verifying whether the buyer is a private customer or a business customer. This series was discontinued in 2004 as PTS then transferred to a three-month rule regarding how long a pre-paid card should be deemed to be active.

[4] Average number of traffic minutes per month = the total number of traffic minutes of the period for mobile telephony divided by the average number of mobile telephony customers during the period.

Table 21 Mobile call services and mobile data - number of outgoing calls (millions) from end-user

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Mobile call services - number of outgoing calls (millions) from end-user										3 637	3 749	4 291	4 974	5 657	5 802
of which within own network [1]										1 884	1 857	2 487	2 553	3 105	3 332
Private										2 296	2 351	2 656	3 127	3 622	3 772
Business										1 340	1 398	1 636	1 846	2 035	2 029
Outgoing calls from mobile telephone to national fixed network										1 332	1 486	1 299	1 373	1 518	1 716
Private										739	839	666	694	793	863
Business										594	646	634	679	726	852
International outgoing calls										56	73	67	95	135	137
Private										33	43	39	56	93	95
Business										23	30	28	39	42	42
Total number of outgoing calls										5 025	5 307	5 658	6 441	7 310	7 654
UMTS and CDMA2000											168	427	827	1 371	2 262
GSM [2]										5 008	5 127	5 222	5 608	5 935	5 392
NMT										17	13	9	6	4	0
Pre-paid cards [3]										1 778	1 824	1 588	1 749	1 765	1 776
Contract subscriptions										3 247	3 484	4 070	4 692	5 546	5 878
Private										3 068	3 233	3 360	3 877	4 508	4 730
Business										1 957	2 074	2 298	2 564	2 803	2 924

Table 21 – Continuation from previous page.

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Average number of calls per mobile voice subscription and month [4]										50	50	53	58	63	64
Private										37	38	39	43	48	50
Business										111	106	110	119	125	124
Average length of call per mobile telephony subscription in minutes									1.83	1.34	1.44	1.75	1.96	2.14	2.36
Private									1.65	1.06	1.19	1.70	1.95	2.14	2.25
Business									2.09	1.79	1.83	1.83	1.98	2.14	2.54
Pre-paid cards [3]										0.84	0.93	1.73	1.99	2.21	2.40
Contract subscriptions										1.62	1.70	1.76	1.95	2.11	2.35

Source: National Post and Telecom Agency (PTS), June 2009.

[1] For service providers where network capacity is purchased from a mobile network operator, 'voice traffic' refers to voice traffic that terminates in the same mobile network to which the service provider is connected.

[2] Includes traffic from UMTS for 2003.

[3] All pre-paid cards are defined as private owing to the difficulty in verifying whether the buyer is a private customer or a business customer.

[4] This series was discontinued in 2004 as PTS then transferred to a three-month rule regarding how long a pre-paid card should be deemed to be active.

Average number of calls per mobile voice subscription and month = the total number of mobile phone calls during the period divided by the average number of mobile telephony subscriptions during the period.

Table 22 Mobile call services and mobile data - mobile data services

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of GSM, UMTS and CDMA 2000 subscriptions with active users of mobile data services (thousands) [1]									91	516	973	2 558	3 728	6 027	5 364
Private									40	357	763	1 942	2 776	4 590	4 060
Business									51	159	209	615	952	1 437	1 304
of which subscriptions for only mobile packet data [2]															
Private													92	376	877
Business													26	228	591
													65	148	287
Proportion GSM, UMTS and CDMA 2000-subscriptions with active users of mobile data services									1.2%	6.0%	11.2%	28.5%	39.3%	60.2%	53.1%
Private									0.6%	5.0%	11.0%	26.8%	36.4%	57.6%	50.3%
Business									3.7%	10.6%	12.3%	35.4%	51.2%	70.6%	63.9%
Revenues from mobile data services (SEKm)								0	14	22	150	326	602	965	1 696
Private								0	1	5	69	125	220	382	927
Business								0	3	17	82	200	381	582	768
Traffic for mobile data services (Tbyte)									1	2	10	60	203	2 191	13 720
Private										1	6	30	104	1 727	11 990
Business										1	5	30	99	464	1 730
Average amount of data traffic (Mbyte) per subscription for mobile data traffic only and month [3]														781	1 824
Private														1 130	2 441
Business														363	663

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The question has been re-defined for the first half year 2008. It has also been difficult for the operators to separate between subscriptions for only voice services and subscription for voice and mobile packet data services prior to the first half-year 2008. For that reason comparability with previous periods has been restricted.

Includes subscriptions that are mainly used for mobile packet data and where the data access has been used at least once during the fourth quarter of 2008 or where subscription charges have been paid during the fourth quarter of 2008.

The subscription should not have generated any voice traffic minutes during the fourth quarter of 2008.

[3] Also includes data traffic from users with other subscriptions than for only mobile packet data.

Table 23 Mobile call services and mobile data - SMS [1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of SMS sent from mobile telephone (millions)					44	141	473	1 020	1 325	1 816	2 044	2 089	2 857	4 826	7 480
of which within own network [2]									622	856	1 062	976	1 398	2 503	3 852
Private							405	899	1 168	1 572	1 720	1 738	2 379	4 068	6 558
Business							68	121	157	244	325	351	478	758	922
Annual growth in number of SMS sent - total						220%	235%	116%	30%	37%	13%	2%	37%	69%	55%
Revenues from SMS (SEKm)							619	1 111	1 401	1 849	1 790	1 668	1 664	1 898	2 024
Private							505	939	1 178	1 595	1 518	1 383	1 363	1 513	1 593
Business							114	172	223	254	272	285	301	385	431
Average number of SMS sent per GSM-, UMTS- and CDMA 2000-telephony customer and month [3]							7.1	12.8	14.9	18.4	19.7	19.7	25.8	41.2	62.0
Private							7.6	14.1	16.0	19.3	20.3	20.4	26.7	43.4	68.1
Business							5.1	7.8	9.6	14.1	16.9	17.0	22.1	32.4	37.7
Denmark [4]							21.2	31.3	39.8	71.9	109.9	132.2	150.0	145.0	156.0
Norway [5]							35.9	51.0	56.6	65.7	70.2	83.4	88.9	86.0	98.0
Finland [6]							24.5	25.7				45.1	45.9	44.0	43.0
Average revenue per SMS sent (SEK) - GSM, UMTS och CDMA 2000 [7]							1.31	1.09	1.06	1.02	0.88	0.80	0.58	0.39	0.27
Private							1.25	1.04	1.01	1.01	0.88	0.80	0.57	0.37	0.24
Business							1.69	1.42	1.42	1.04	0.84	0.81	0.63	0.51	0.47
Average revenue from SMS (SEK) per subscription and month - GSM, UMTS och CDMA 2000 [8]							9.35	14.00	15.73	18.70	17.21	15.76	15.01	16.22	16.77
Private							9.53	14.69	16.18	19.55	17.92	16.23	15.27	16.16	16.55
Business							8.63	11.13	13.69	14.70	14.11	13.81	13.93	16.47	17.63

Source: National Post and Telecom Agency (PTS), June 2009.

Fel! Hittar inte referensälla. – Continuation from previous page.

[1] Short Message Service

[2] For service providers where network capacity is purchased from a mobile network operator, 'SMS' relates to SMS that terminate in the same network to which the service provider is connected.

[3] Average number of SMS sent per GSM-, UMTS- and CDMA 2000-telephony customer and month = the number of SMS sent during the period divided by the average number of GSM-, UMTS- and CDMA 2000-telephony customers during the period, and divided by the number of months during the period.

[4] Based on statistics from the National IT and Telecom Agency in Denmark.

[5] Based on statistics from the Norwegian Post and Telecommunications Authority.

[6] Based on statistics from Viestintävirasto, the Finnish Communications Regulatory Authority.

[7] Average revenue per SMS sent = the number of SMS sent during the period divided by the revenues from SMS during the period

[8] This series was discontinued in 2005 as PTS transferred to a three-month rule in 2004 regarding how long a pre-paid card should be deemed to be active.

Table 24 Mobile call services and mobile data - MMS [1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of MMS sent from mobile telephone (millions)										7	27	39	70	103	139
Private											20	31	55	80	108
Business											7	8	15	22	31
Annual growth in number of MMS sent - total											301%	45%	80%	46%	36%
Revenues from MMS (SEKm)											29	67	110	109	142
Private											22	49	88	84	112
Business											7	18	23	25	30
Average number of MMS sent per GSM-, UMTS- and CDMA 2000-telephony customer and month [2]										0.07	0.26	0.37	0.63	0.88	1.15
Private											0.24	0.36	0.62	0.86	1.12
Business											0.35	0.38	0.69	0.94	1.28
Denmark [3]										0.1	0.2	0.4	0.4	0.4	0.8
Norway [4]										0.4	1.4	1.6	1.7	1.6	2.0
Finland [5]											0.3	0.3	0.3	0.3	0.4
Average revenue from MMS (SEK) per subscription and month - GSM, UMTS och CDMA 2000 [6]											0.28	0.64	1.00	0.94	1.18
Private											0.26	0.58	0.98	0.90	1.16
Business											0.37	0.86	1.05	1.08	1.24

Source: National Post and Telecom Agency (PTS), June 2009.

[1] Multimedia Messaging Service

[2] Average number of MMS sent per GSM-, UMTS- and CDMA 2000-telephony customer and month = the number of MMS sent during the period divided by the average number of GSM-, UMTS- and CDMA 2000-telephony customers during the period, and divided by the number of months during the period.

[3] Based on statistics from the National IT and Telecom Agency in Denmark.

[4] Based on statistics from the Norwegian Post and Telecommunications Authority.

[5] Based on statistics from Viestintävirasto, the Finnish Communications Regulatory Authority.

[6] Average revenue per MMS sent = the revenues from MMS during the period divided by the number of MMS sent during the period.

Table 25 Mobile call services and mobile data - interconnection in mobile networks

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Revenue from termination of incoming traffic from national operators' networks (SEKm)							5 270	5 394	5 042	5 021	4 660	4 226	4 236	4 196	3 876
of which group internal revenues										1 091	1 141	1 049	976	966	715
From mobile networks								1 305	1 440	1 429	1 378	1 478	1 857	1 979	1 898
From fixed networks								4 089	3 602	3 591	3 282	2 749	2 379	2 218	1 978
Revenues from termination of international incoming traffic (SEKm)							272	197	219	232	224	291	306	294	237
Total [1] interconnection revenues in mobile networks (SEKm)							5 542	5 591	5 261	5 253	4 884	4 517	4 541	4 491	4 113
Number of terminated call minutes from national operators' networks (millions of minutes)								3 842	4 571	4 676	5 204	5 529	6 497	7 440	8 194
of which group internal traffic									1 197	1 230	1 389	1 443	1 556	1 753	1 701
From mobile networks								908	1 098	1 228	1 416	1 908	2 848	3 384	3 885
From fixed networks								2 933	3 473	3 448	3 788	3 621	3 649	4 056	4 310
Termination of international incoming traffic (millions of minutes)								136	136	177	163	366	439	479	386
Total interconnection in mobile networks (millions of minutes)							3 525	3 978	4 707	4 853	5 367	5 895	6 936	7 919	8 581
Average revenue per interconnection minute from incoming national traffic								1.40	1.10	1.07	0.90	0.76	0.65	0.56	0.47
Average revenue per interconnection minute from total incoming traffic							1.57	1.41	1.12	1.08	0.91	0.77	0.65	0.57	0.48

Source: National Post and Telecom Agency (PTS), june 2009.

[1] Does not include revenues from SMS and data.

Table 26 Mobile call services and mobile data – telematics

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of M2M subscriptions [1] (thousands)															1 583
Revenues from M2M subscriptions (SEKm)															268

Source: National Post and Telecom Agency (PTS), June 2009.

[1] Subscriptions = contract subscriptions + pre-paid cards.

6.4 Data communications services

Table 27 Data communications services to end-user [1] - revenues from national data communications services (SEKm)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Frame [2]								1 927	1 876	1 286	720	287	210	124	56
IP-VPN [3]								208	649	1 263	1 637	1 912	2 172	2 212	2 220
Leased lines [4]								2 178	2 124	1 808	1 650	1 601	1 387	1 352	1 396
of which analogue								177	636	535	509	487	498	455	367
of which digital <2 Mbit/s								1 464	1 002	649	500	338	342	265	245
of which digital >2 Mbit/s								537	486	625	641	776	547	633	784
Dark fibre and other raw network capacity								105	183	280	343	426	445	342	334
Total revenues for data communications services to end-user								4 419	4 832	4 637	4 349	4 226	4 213	4 030	4 006

Source: National Post and Telecom Agency (PTS), June 2009.

[1] Relates to the retail market, i.e. sales made to end-users such as enterprises and state, municipal and other public operations.

Wholesale sales, i.e. sales made to operators (relates to both operators within a group and external operators) for onward sales - even after further refinement - are not included.

[2] Relates to, among others, Frame Relay and ATM.

[3] IP-VPN means the following standards: IPsec VPN, IP MPLS VPN (not yet standardised by IETF) and IP SSL VPN. Access to IP-VPN services can either take place via leased lines or dial-up connections. Costs for dial-up access (ISDN/PSTN) are not included in the revenues, though costs for leased lines are included when these are used in the IP-VPN service.

[4] Relates to provision of network capacity between fixed network interconnection points as a separate service. The service does not include connection on request or offers that comprise part of an associated service that is offered to the public. Revenues obtained from Frame Relay and other more refined services are excluded in leased lines, and also revenues from leased lines, as these are included as part of IP-VPN services.

NOTE: Also includes revenues from leased lines in accordance with the minimum range.

Table 28 Data communications services to end-user [1] - number of national installed ports/leased lines

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Frame [2]								15 388	10 668	8 118	11 198	7 662	2 520	1 848	1 039
IP-VPN [3]								11 904	19 904	21 189	32 984	37 344	55 893	60 844	70 114
Leased lines [4]								311 815	262 222	238 909	223 172	203 322	222 636	183 944	207 377
of which analogue								32 701	232 934	207 877	181 769	157 492	126 467	117 193	107 899
of which digital <2 Mbit/s								268 235	22 018	14 505	11 519	13 354	11 561	10 019	27 853
of which digital >2 Mbit/s								10 879	7 270	16 527	29 884	32 476	84 608	56 732	71 625
Total number of connections/ports for data communications services to end-user								339 107	292 794	268 216	267 354	248 328	281 049	246 636	278 530

Source: National Post and Telecom Agency (PTS), june 2009.

[1] Relates to the retail market, i.e. sales made to end-users such as enterprises and state, municipal and other public operations.

Wholesale sales, i.e. sales made to operators (relates to both operators within a group and external operators) for onward sales

- even after further refinement - are not included. However, services that are sold to own operations for own use are included in the retail market.

[2] Relates to, among others, Frame Relay and ATM.

[3] IP-VPN means the following standards: IPsec VPN, IP MPLS VPN (not yet standardised by IETF) and IP SSL VPN. Access to IP-VPN services can either take place via leased lines or dial-up connections. Leased lines, when these are used in IP-VPN services, shall be included in the number of connections, but not connections for dial-up access (ISDN/PSTN). Only ports with a termination point with an end-user are included.

[4] Excludes those leased lines that are included as part of IP-VPN services. Only ports with a termination point with an end-user are included.

6.5 Internet services

Table 29 Internet services - number of active Internet-access customers [1] per form of access (thousands)

	31dec. 1994	31dec. 1995	31dec. 1996	31dec. 1997	31dec. 1998	31dec. 1999	31dec. 2000	31dec. 2001	31dec. 2002	31dec. 2003	31dec. 2004	31dec. 2005	31dec. 2006	31dec. 2007	31dec. 2008
Internet subscriptions - private		41	184	529	1 276	1 673	1 971	2 494	2 702	2 900	2 932	2 964	3 268	3 518	3 700
PSTN [2] (Modems up to 56 kbps)							1 784	1 996	1 974	1 936	1 669	1 207	1 005	688	414
ISDN [3]							74	74	69	53	30	16	17	12	1
DSL [4]							22	223	371	505	749	1 083	1 378	1 552	1 562
Cable television							56	111	156	211	242	354	453	535	561
Fixed radio							0	1	2	5	6	7	4	4	3
Mobile broadband [5]													26	228	591
Satellite							0.5		0.1	0.7	0.8	0.8	0.6	0.0	2.2
Fiber and fiber-LAN [6]									128	189	234	295	379	493	566
Other broadband access							35	89		0	1	2	6	5	0
Internet subscriptions - business		14	52	124	174	207	277	325	330	343	362	338	327	441	573
PSTN [2] (Modems up to 56 kbps)							214	237	218	213	214	165	68	86	69
ISDN [3]							52	59	47	37	35	29	15	16	7
DSL [4]							4	18	50	76	97	124	154	164	176
Cable television							0	1	0	1	1	1	1	1	1
Fixed radio							0	0	1	1	2	1	1	1	1
Mobile broadband [5]													65	148	287
Satellite												0.3	0.1	0.0	0.1
Fiber and fiber-LAN [6]									5	6	7	8	11	16	24
Other broadband access							6	9	9	9	7	9	11	9	9
Internet subscriptions - total		54	236	653	1 450	1 880	2 248	2 819	3 032	3 243	3 293	3 302	3 595	3 958	4 273
PSTN [2] (Modems up to 56 kbps)							1 998	2 233	2 191	2 149	1 883	1 372	1 073	774	482
ISDN [3]							126	133	117	90	64	46	32	27	8
DSL [4]							26	242	421	581	846	1 207	1 531	1 716	1 737
Cable television							56	112	156	212	243	355	454	536	563
Fixed radio							0	1	3	6	7	9	5	5	4
Mobile broadband [5]													92	376	877
Satellite							0.5		0.1	0.7	0.8	1.0	0.7	0.0	2.2
Fiber and fiber-LAN [6]									134	195	241	302	390	509	590
Other broadband access							40	99	9	10	8	10	17	15	9

Source: National Post and Telecom Agency (PTS), June 2009.

Table 29 – Continuation from previous page.

[1] Active customer means a customer that has used his access at least once during the quarter that precedes the measurement period in question (only applies to those customers who do not pay subscription charges). If the customer pays a subscription charge, the customer is deemed to be active if the payment was made during the immediately preceding quarter.

[2] Public Switched Telephone Network.

[3] Integrated Services Digital Network.

[4] Digital Subscriber Line. The two most common are ADSL (Asymmetrical Digital Subscriber Line) and VDSL (Very-high-bit-rate Digital Subscriber Line).

[5] Subscriptions for data access cards, internal data access cards and data access cards that connects with USB or similar.

[6] Internet access is reached via a property network, i.e. a LAN (local area network, usually based on Ethernet technology).

The LAN is linked to a public fibre network; for example, a wide area network (WAN).

The property network, which may comprise optical fibre cable or copper-based cable, links the individual dwellings/operations with the property node, which in its turn is connected to the wide area networks.

Table 30 Internet services - percentage distribution of the number of active Internet-access customers [1] per form of access

	31dec. 1994	31dec. 1995	31dec. 1996	31dec. 1997	31dec. 1998	31dec. 1999	31dec. 2000	31dec. 2001	31dec. 2002	31dec. 2003	31dec. 2004	31dec. 2005	31dec. 2006	31dec. 2007	31dec. 2008
Internet subscriptions - private							100%	100%	100%	100%	100%	100%	100%	100%	100%
PSTN [2] (Modems up to 56 kbps)							90%	80%	73%	67%	57%	41%	31%	20%	11%
ISDN [3]							4%	3%	3%	2%	1%	1%	1%	0%	0%
DSL [4]							1%	9%	14%	17%	26%	37%	42%	44%	42%
Cable television							3%	4%	6%	7%	8%	12%	14%	15%	15%
Fixed radio							0%	0%	0%	0%	0%	0%	0%	0%	0%
Mobile broadband [5]													1%	6%	16%
Satellite							0.02%		0.00%	0.02%	0.03%	0.03%	0.02%	0.00%	0.06%
Fiber and fiber-LAN [6]									5%	7%	8%	10%	12%	14%	15%
Other broadband access							2%	4%		0%	0%	0%	0%	0%	0%
Internet subscriptions - business							100%	100%	100%	100%	100%	100%	100%	100%	100%
PSTN [2] (Modems up to 56 kbps)							77%	73%	66%	62%	59%	49%	21%	20%	12%
ISDN [3]							19%	18%	14%	11%	10%	9%	5%	4%	1%
DSL [4]							1%	6%	15%	22%	27%	37%	47%	37%	31%
Cable television							0%	0%	0%	0%	0%	0%	0%	0%	0%
Fixed radio							0%	0%	0%	0%	0%	0%	0%	0%	0%
Mobile broadband [5]													20%	34%	50%
Satellite												0.08%	0.03%	0.00%	0.01%
Fiber and fiber-LAN [6]									2%	2%	2%	2%	3%	4%	4%
Other broadband access							2%	3%	4%	4%	4%	5%	7%	6%	6%
Internet subscriptions - total							100%	100%	100%	100%	100%	100%	100%	100%	100%
PSTN [2] (Modems up to 56 kbps)							89%	79%	72%	66%	57%	42%	30%	20%	11%
ISDN [3]							6%	5%	4%	3%	2%	1%	1%	1%	0%
DSL [4]							1%	9%	14%	18%	26%	37%	43%	43%	41%
Cable television							3%	4%	5%	7%	7%	11%	13%	14%	13%
Fixed radio							0%	0%	0%	0%	0%	0%	0%	0%	0%
Mobile broadband [5]													3%	9%	21%
Satellite							0.02%		0.00%	0.02%	0.02%	0.03%	0.02%	0.00%	0.05%
Fiber and fiber-LAN [6]									4%	6%	7%	9%	11%	13%	14%
Other broadband access							2%	3%	5%	6%	8%	9%	11%	13%	14%

Source: National Post and Telecom Agency (PTS), June 2009.

Table 30 – Continuation from previous page.

[1] Active customer means a customer that has used his access at least once during the quarter that precedes the measurement period in question (only applies to those customers who do not pay subscription charges). If the customer pays a subscription charge, the customer is deemed to be active if the payment was made during the immediately preceding quarter.

[2] Public Switched Telephone Network.

[3] Integrated Services Digital Network.

[4] Digital Subscriber Line. The two most common are ADSL (Asymmetrical Digital Subscriber Line) and VDSL (Very-high-bit-rate Digital Subscriber Line).

[5] Subscriptions for data access cards, internal data access cards and data access cards that connects with USB or similar.

[6] Internet access is reached via a property network, i.e. a LAN (local network) usually based on Ethernet technology. The property network is linked to a public fibre network, for example an area network. The property network, which may comprise optic fibre cable or copper-based cable, links the individual dwellings/operations with the property node, which in its turn is connected to the area networks.

Table 31 Internet services - number of active customers with broadband connection to Internet (thousands)

	31dec. 1994	31dec. 1995	31dec. 1996	31dec. 1997	31dec. 1998	31dec. 1999	31dec. 2000	31dec. 2001	31dec. 2002	31dec. 2003	31dec. 2004	31dec. 2005	31dec. 2006	31dec. 2007	31dec. 2008
Number of subscriptions with broadband connection [1]							124	454	724	1 004	1 346	1 884	2 490	3 156	3 782
Private							113	425	658	911	1 233	1 741	2 246	2 818	3 285
Business							10	29	65	93	114	143	244	338	498
of which via mobile broadband													92	376	877
Private													26	228	591
Business													65	148	287
Number of subscriptions with transmission capacity of 2 Mbit/s or more [2]							3	93	120	168	538	984	1 608	2 165	3 146
Private							2	89	113	159	517	934	1 502	2 022	2 746
Business							1	4	7	10	20	50	105	142	399
of which via mobile broadband													0	0	699
Private													0	0	475
Business													0	0	224
Number of subscriptions with transmission capacity of 10 Mbit/s or more [3]										137	272	408	594	854	1 017
Private										136	268	398	580	830	977
Business										1	4	10	14	24	40
of which via mobile broadband													0	0	0
Private													0	0	0
Business													0	0	0

Source: National Post and Telecom Agency (PTS), June 2009.

[1] Relates to xDSL, PLC, cable-tv, fixed radio, mobile broadband, satellite, fiber and fiber-LAN and other broadband access.

[2] At least 2 Mbit/s downstream. NOTE: The definition for 2003 and earlier was at least 2 Mbit/s both upstream and downstream.

[3] At least 10 Mbit/s downstream. NOTE: The definition for 2003 and earlier was at least 10 Mbit/s both upstream and downstream.

Table 32 Internet services - revenues from Internet access - end-user (SEKm) [1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Revenues from fixed Internetaccess - private			215	560	1 109	1 652	2 240	2 806	3 550	3 904	4 677	5 283	6 100	6 649	6 891
Revenues from fixed broadband connections [2]							206	772	1 889	2 486	3 344	4 367	5 512	6 305	6 722
Revenues from dial-up connection [3]							2 035	2 034	1 660	1 418	1 334	916	588	344	169
<i>of which minute-based traffic revenues</i>							1 745	1 755	1 459	1 283	1 207	810	500	254	123
Revenues from fixed Internetaccess - business			133	360	590	659	1 307	1 749	1 810	1 860	2 020	1 968	1 950	1 688	1 697
Revenues from fixed broadband connections [2]							549	1 045	1 305	1 417	1 706	1 763	1 841	1 642	1 668
Revenues from dial-up connection [3]							758	703	504	443	313	204	109	46	28
<i>of which minute-based traffic revenues</i>							605	654	442	390	266	159	79	25	11
Revenues from fixed Internetaccess - total			348	920	1 699	2 311	3 548	4 555	5 360	5 763	6 697	7 250	8 050	8 337	8 588
Revenues from fixed broadband connections [2]			17	46	87	128	755	1 817	3 195	3 903	5 050	6 130	7 353	7 947	8 390
Revenues from dial-up connection [3]			331	874	1 612	2 183	2 793	2 738	2 165	1 861	1 647	1 120	697	389	197
<i>of which minute-based traffic revenues</i>			278	736	1 350	1 800	2 349	2 409	1 902	1 673	1 474	969	580	279	134

Source: National Post and Telecom Agency (PTS), June 2009.

[1] Does not include interconnection revenues, group internal revenues or revenues from subscriptions for data access cards, internal data access cards and data access cards that connects with USB or similar.

[2] Excl. revenues from mobile broadband. Revenues from mobile broadband are shown separately. Includes connection and other one off charges together with fixed and variable charges for broadband access. Includes e-mail only when this is included in the fixed charge. Does not relate to revenues from data communications services.

[3] Includes e-mail only when this is included in the subscription.

Table 33 Internet services - percentage distribution of revenues from Internet access - end-user [1]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Revenues from fixed Internetaccess - private							100%	100%	100%	100%	100%	100%	100%	100%	100%
Revenues from fixed broadband connections [2]							9%	28%	53%	64%	71%	83%	90%	95%	98%
Revenues from dial-up connection [3]							91%	72%	47%	36%	29%	17%	10%	5%	2%
Revenues from fixed Internetaccess - business							100%	100%	100%	100%	100%	100%	100%	100%	100%
Revenues from fixed broadband connections [2]							42%	60%	72%	76%	84%	90%	94%	97%	98%
Revenues from dial-up connection [3]							58%	40%	28%	24%	16%	10%	6%	3%	2%
Revenues from fixed Internetaccess - total			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Revenues from fixed broadband connections [2]			5%	5%	5%	6%	21%	40%	60%	68%	75%	85%	91%	95%	98%
Revenues from dial-up connection [3]			95%	95%	95%	94%	79%	60%	40%	32%	25%	15%	9%	5%	2%

Source: National Post and Telecom Agency (PTS), June 2009.

[1] Does not include interconnection revenues, group internal revenues or revenues from subscriptions for data access cards, internal data access cards and data access cards that connects with USB or similar.

[2] Excl. revenues from mobile broadband. Revenues from mobile broadband are shown separately. Includes connection and other one off charges together with fixed and variable charges for broadband access. Includes e-mail only when this is included in the fixed charge. Does not relate to revenues from data communications services.

[3] Includes e-mail only when this is included in the subscription.

Table 34 Internet services - growth, penetration and average revenue

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Annual growth in number of Internet access subscriptions			337%	177%	122%	30%	20%	25%	8%	7%	2%	0%	9%	10%	8%
Private			349%	188%	141%	31%	18%	27%	8%	7%	1%	1%	10%	8%	5%
Business			271%	138%	40%	19%	34%	17%	2%	4%	5%	-7%	-3%	35%	30%
of which via mobile broadband														309%	133%
Private														763%	159%
Business														126%	94%
Annual growth in number of subscriptions to broadband connections to the Internet								267%	60%	39%	34%	40%	32%	27%	20%
Private								275%	55%	38%	35%	41%	29%	25%	17%
Business								177%	127%	42%	22%	26%	70%	39%	47%
of which via mobile broadband														309%	133%
Private														763%	159%
Business														126%	94%
Annual growth in number of Internet access subscriptions with 2 Mbit/s or more									29%	41%	219%	83%	63%	35%	45%
Private									27%	40%	226%	80%	61%	35%	36%
Business									59%	47%	104%	150%	109%	35%	181%
of which via mobile broadband															
Private															
Business															

Table 34 – Continuation from previous page.

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Subscriptions to fixed Internet access as a proportion of number of households [3]			4%	12%	29%	38%	45%	57%	61%	66%	67%	67%	73%	74%	69%
Connection with 2 Mbit/s or more [2]							0%	2%	3%	4%	12%	21%	34%	45%	51%
Connection with 10 Mbit/s or more										3%	6%	9%	13%	19%	22%
Subscriptions to fixed broadband access as a proportion of number of households [4]							3%	10%	15%	21%	28%	39%	50%	58%	60%
Connection with 2 Mbit/s or more [2]							0%	2%	3%	4%	12%	21%	34%	45%	51%
Connection with 10 Mbit/s or more										3%	6%	9%	13%	19%	22%
Internet subscriptions as a proportion of the population [5]		0%	2%	6%	14%	19%	22%	28%	30%	32%	33%	33%	36%	38%	40%
Connection with 2 Mbit/s or more [2]							0%	1%	1%	2%	6%	10%	16%	22%	30%
Connection with 10 Mbit/s or more										2%	3%	4%	6%	9%	11%
Mobile broadband subscriptions as a proportion of the population [6]													0%	2%	6%
Connection with 2 Mbit/s or more [2]													0%	0%	5%
Connection with 10 Mbit/s or more													0%	0%	0%
Average revenue per subscription to fixed Internet access and month (SEK) [7]			200	172	135	116	143	150	153	153	171	183	197	196	205
Private			159	131	102	93	102	105	114	116	134	149	164	170	179
Business			336	341	330	288	450	484	460	460	478	469	542	508	489
Average revenue per subscription to fixed broadband access and month (SEK) [7]							1 018	525	452	376	358	316	286	256	246
Private							303	239	291	264	260	245	232	218	212
Business							8 782	4 437	2 306	1 490	1 377	1 146	955	742	693

Source: National Post and Telecom Agency (PTS), June 2009.

Table 34 – Continuation from previous page.

[1] Relates to xDSL, PLC, cabel-tv, fixed radio, mobil broadband, satellite, fiber and fiber-LAN and other broadband access.

[2] At least 2 Mbit/s downstream. NOTE: The definition for 2003 and earlier was at least 2 Mbit/s both upstream and downstream.

[3] Relates to PSTN, ISDN, xDSL, PLC, cabel-tv, fixed radio, mobil broadband, satellite, fiber and fiber-LAN and other broadband access.

The proportion is computed by dividing the number of subscriptions to fixed Internet access by data from Statistics Sweden (SCB) on the number of housekeeping units in Sweden.

The fact that one household can have several Internet subscriptions has not been taken into account.

[4] Relates to xDSL, PLC, cabel-tv, fixed radio, satellite, fiber and fiber-LAN and other broadband access.

The proportion is computed by dividing the number of subscriptions to fixed broadband access by data from Statistics Sweden (SCB) on the number of housekeeping units in Sweden.

The fact that one household can have several Internet subscriptions has not been taken into account.

[5] Relates to PSTN, ISDN, xDSL, PLC, cabel-tv, fixed radio, mobil broadband, satellite, fiber and fiber-LAN and other broadband access.

The proportion is computed by dividing the number of Internet subscriptions by data from Statistics Sweden (SCB) on the population of Sweden.

The fact that one household can have several Internet subscriptions has not been taken into account.

[6] Relates to mobile broadband. The proportion is computed by dividing the number of mobile broadband subscriptions by data from Statistics Sweden (SCB) on the population of Sweden.

The fact that one household can have several Internet subscriptions has not been taken into account.

[7] Average revenue per fixed Internet subscription = revenues of the period divided by the average number of fixed Internet subscriptions.

6.6 Television services

Table 35 Television services - Number of subscriptions

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total number of subscriptions [1]													4 200	4 608	4 545
Analogue - via cable network [2]													2 343	2 301	2 143
Analogue - via satellite:															0
Digital - via terrestrial network:													654	709	689
Digital - via cable network [3]													431	554	679
Digital - via satellite													720	694	681
Iptv - via LAN [4]													24	61	75
IPTV - via the metal-based access network													28	290	278
IPTV - via other infrastructure															0

Source: National Post and Telecom Agency (PTS), June 2009.

[1] The customer is deemed to be active if payment of a subscription charge was made during the fourth quarter of 2008.

Either via contract directly with household or indirectly, via distributor (such as property owner or similar associations).

Subscription here relates to a basic package ('basic range' and the like) of channels that are provided to end-users.

[2] The subscription/network is analog if the broadcasts in the network could be received by a standard television receiver without decoding the signal.

[3] The subscription/network is digital if the signal distributed to the property owner's network or directly to the household is digital.

[4] LAN network means a fixed connection which is reached via a LAN (local network, property network) usually based on Ethernet technology. The LAN is linked to a public fibre network, for example an area network. The LAN (which may comprise optic fibre cable or copper-based cable) links the individual dwellings/operations with a centrally located data switch in the premises, which in its turn is connected to the routers available in the area and backbone networks.

6.7 Bundled services

Table 36 Bundled subscriptions (thousands)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Double-play:															440
Private															440
Business															0
Fixed telephony and broadband:															340
Private															340
Business															0
Fixed telephony and television:															16
Private															16
Business															0
Fixed telephony and mobile telephony:															8
Private															8
Business															0
Mobile telephony and broadband:															2
Private															2
Business															0
Mobile telephony and television:															0
Private															0
Business															0
Television and broadband:															74
Private															74
Business															0
Other combinations:															
Private															
Business															

Table 36 – Continuation from previous page.

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Triple-play:															299
Private															299
Business															
Fixed telephony and broadband and television:															252
Private															252
Business															
Fixed telephony and broadband and mobile telephony:															47
Private															47
Business															
Fixed telephony and mobile telephony and television:															0
Private															0
Business															
Mobile telephony and broadband and television:															0
Private															0
Business															
Other combinations:															
Private															
Business															
Quadruple -play:															2
Private															2
Business															
Fixed telephony and broadband and television and mobile telephony:															2
Private															2
Business															
Other combinations:															
Private															
Business															
Total (double play, triple play and quadruple play):															740
Private															740
Business															0

Source: National Post and Telecom Agency (PTS), June 2009.

7 Schedule of participants

21st Century Mobile Solutions Svenska AB	Axfone AB	Bredband2 AB	Cygate AB
2Bornot2B AB	B2 Bredband AB	Bredbands Enheten (Malmö Stad)	Dahema Sambandservice & garnisonsnätet
3W Solutions AB	Bahnhof AB	Bredbandsteknik 2000 i Karlshamn AB	Dala energi AB
42IT AB	Balder Tech AB	Bredbandstelefon i Sverige AB	Dals-Eds kommun
AB Borlänge Energi	Bamok Com AB	Brinet AB	Datamatrix Outsourcing AB
AB Grundstenen120177 uä Access 4u AB	Banverket ICT	BT Nordics Limited UK Filial	Dataphone Scandinavia AB
AB Hallstahem	Barablu Mobile Scandinavia Limited	BygdaNet Ekonomisk Förening	Degerfors Energi
AB iP.1 internet till företag	Basefarm AB	Bålsta Kabel TV	Devicom AB
AB Lessebo Fastigheter	Basiq Networks BN AB	C4 Elnät AB	Devicom Mobile AB
AB PiteEnergi	BearCom AB	Cable & Wireless Sweden AB	DGC Access AB
AB STOKAB	Bengtsfors Energi Nät AB	Campuz Mobile AB	DGC Communications AB
AB Tierpsbyggen	Bengtsfors kommun	Canal Digital Kabel	Dial It Communications B.V.
ABM Telecom AB	Best 4 You	Canal Digital Satellit	Digitala Produkter
ACN Communications Sweden AB	BIVA Bredband i Varend AB	Canal Digital Sverige AB	DinTelefon.nu
Action Direct	Bjurholms Kommun	Carl Lamm AB	Direct Connect AS
Adamo Europe SL	Bjäre Kraft Bredband AB	Carlsids Bredband Ek. för.	Direct2Internet AB
Affinity Telecom AB	Bjäre Kraft ekonomisk förening	Carrot Communications AB	Djuice Mobile Sweden
Affärsverken Karlskrona AB	Blixtvik AB	Cellip AB	Dorotea Kommun
Ahhaaa AB	Bodens Energi Nät AB	Cepus Internet Solutions AB	driftbolaget i Norden AB
Alenet Communication AB	Bogal AB	Cheaptel AB	duvialla AB
ALFA VISION Ek. För.	Borderlight AB	Clue AB	efftel AB
Alingsås Energi Nät AB	BoreNet AB	CMT Telecom Callmedia AB	Ekhosat Kabel TV AB
AllTele Allmänna Svenska Telefonaktiebolaget	Borås Elnät AB	COLT Telecom AB	Eksjö Energi Elit AB
Anxada Sweden	Bostream (f.d. BoNet)	com hem AB	Eksjö kommun
Arcstel AB	Boxer TV-Access AB	Community Com Sweden AB	Elektronik AB Radio-Master
Arjeplogs Kommun	Bredband 2 AB - 9679	Comne Work AB	Elverket I Vallentuna AB
Arvidsjaurs Kommun	Bredband i Gislaved Gnosjö AB	Comtelo AB	Emmaboda Energi och Miljö AB
Arvika Elnät AB	Bredband i Kristianstad AB	Consorte Sverige AB	Engboms Network Solution AB
AT&T Global Network Services Sweden AB	Bredband i Kristianstad Nät AB	CRW Data AB	Eniro 118118 AB
Avesta Kommun	Bredband Östra Skaraborg	C-Sam AB	Epicom AB

EPM Data AB	Gällivare Kommun	HögsbyNät AB	Karlskoga Bredband AB
Eskilstuna Energi & Miljö AB	Gästabudstaden AB	IBS Norra Norrland AB	Karlskoga Elnät AB
Eurobell	Gävle Energi AB	iMEZ AB	Karlstad Elnät AB / Stadsnät
Europhone in Sweden AB	Gävle Kommun	Infogram System AB	Karlstads kommun
Extended partners int. technology in Stockholm AB	Götalandsnätet AB	InformationsTeknik i Norrbotten AB	Kiruna Kommun
Facilicom	Göteborg Energi GothNet AB	Infracom AB	Kommunicera i Umeå AB
Falbygdens Bredband AB	Götene Kommun	Insat Net AB	Koppla Skandinavien AB
Falbygdens Energi AB	Habo Kraft AB	Interdirect Tel Limited	KPN EuroRings BV
Falu Elnät AB	Hagfors kommun	Interoute Communications Limited	Kraftringen Service AB
Fast TV	Halmstad Energi och Miljö AB	Intraphone AB	Kramfors Media Teknik AB
Fastbit AB	Halmstadept AB	Intraphone IT AB	Kristinehamns kommun
Fiberdirekt AB	Halmstads Fastighets AB	IPalive AB	Kungsbacka Kommun
Fiberstaden AB	Haparanda Kommun	IPbolaget Skandinavien AB	Kungsörs Fastighets AB
Finarea SA	Hedemora Energi IT net AB	IPC Network Services	Kungälv's Energi AB
Finspångs Stadsnät, Finet AB	Hedemora Kabel-TV AB	Ipeer AB	Kustbandet AB
First New Media Scandinavia AB	Helsing Net AB	iPhone AS	Kävlinge Kommun
Fix Telecom SE Ltd.	HerjeNet AB	IP-Only Telecommunication AB	Köpings Kabel TV
Forest Star AB	Herrljunga Elektriska AB	iSpace Telecom AB	LA Cable AB
Fortum Distribution AB	HI3G Access AB	IT mästaren Mitt AB	Lan Assistans & Konsulting AB
France Telecom Network Services - Sweden	Hjo Energi AB	IT Åre AB	LDG Connect AS
Freespee AB	Hofors Kommun	IT4U Sweden AB	Lebara Ltd.
Fujitsu Services AB	HSB Malmö Ek. Förening	Ivar Westberg Elektronikservice	Level 3 Communications AB
G & T Invest Aktiebolag	Hudiksvalls kommun	Jobbomat / Xtelecom	Le-vonline AB
GC Pan European Crossing Sverige AB	Hughes Network Systems Limited	Jokkmokks Kommun	Lidén Data Internetwork AB
Generic Mobile Systems Sweden AB	HVE Balt-Com Fiber AB	JT Tech	Lidero Network AB
GlobeCom	Hylte kommun	Jämtkraft Telecom AB	Lidköpings Kommun
Glocalnet Scandinavia AB	HåboNet AB	Jönköping Energi AB	Linx Networks Sweden AB
Gotlands Energi AB	Härjeåns Nät AB	Kalix Kommun	Ljungby Energi AB
Grästorp Energi	Härnösand Energi & Miljö AB	Kalix Tele24 AB	Ljusnet AB
GTelecom Limited (B.V.I) - Filial	Höganäs Energi AB	Karlsborgs Energi AB	LNS Kommunikation AB

Local Internet Provider AB	NemTel	Oxyfi AB	Satellituset i Limmared AB
Logica Norr AB	Net at Once Sweden AB	Pajala Kommun	SAVMAN AB
Ludvika kommun	NETnet	Perfect Communication Sweden AB/ePhone	SAVVIS Europe BV The Netherlands, filial Sweden
Lulebo AB	Netnod Internet Exchange AB	Perspektiv Bredband AB	SB Broadband Operations AB
Lunet AB	NetPower Wireless Solutions AS	Perstorp Näringslivs AB	SeaNet Maritime Communications AB
Lycksele Kommun	NetProvider Nordic AB	Phonelink Scandinavia AB	Secure Transmission Sweden AB
Lyssna & Njut AB	Netsize Sverige AB	Phonera AB	Sense communications Internat. AS
LäNet Västerbotten Data och Tele AB	Netxtra	Phonera Företag AB	Serverhallen i Norden AB
Malungs elnät AB	Nitma AB	Phonzo AS	SEVAB Nät AB
Malå Kommun	Nordisk Mobiltelefon Sweden AB	PI.SE AB	SIHI Scandinavia AB
Mariestad Töreboda Energi AB	Nordmalings Kommun	pin Sweden AB	Sjöfartsverket
Maritime Communications Partner AS	Norrskan AB	Piteå kommun	Skara Energi AB
MEAC	Norrtälje Energi AB	Plusenergi AB	Skellefteå Kraft Elnät AB
Media Network i Halmstad AB	Norrtälje Energi Försäljnings AB	punktR AB	Skinnskattebergs kommun
Mediateknik i Varberg AB	Norsjö Kommun	Qall Telecom AB	Skurups Kommun
Megaphone AB	Nossebro Energi Försäljnings AB	QuickNet AB	Skövde kommun, Tekniska nämnden
Mindre kabelnät och fastighetssammanlutningar	Nossebroortens energi ek. förening	Rabbta	Smedjebackens Energi Nät AB
MKB Net AB	NTT Europe Ltd	Real Smart Communication Europe KB	Smålands Bredband AB
Mobile Business Challenger MBC AB	Nynäs Stadsnät AB	RebTel Networks AB	Sollefteå Kommun
Mobivox AB	Nässjö Affärsverk AB, Bredband	Regionförbundet Gävleborg	Sollentuna Energi AB
Mobot AB	OK-Q8 AB	Respons	Sonera
Mora Kommun	Olofströms Kabel-TV	Rix Telecom AB	Sorsele Kommun
Motala Kommun	Olofströms Kraft AB	Robertsfors Kommun	Sourcecom Svenska AB
Mowic AB	Omninet AB	Ronneby Miljö & Teknik AB	Spide Rboss AB
Multicom Security AB	One Telecom AB	Roslagen Broadband Network AB	Spinbox AB
MWNNet AB	Open Broadbandnet Sweden AB	RSL COM Business AB	Spray Telecom AB
Mälardalens Datorförening	Optimal Telecom Sverige AB	RSLCOM Sweden AB	Spring Mobil AB
Mälarenergi Stadsnät AB	Orange Business Sweden AB	RTC Factory AB	Stadsnät i Kumla
Mönsterås Kommun	Oskarshamn Energi AB	Rätt Internetkapacitet i Sverige AB	Stadsnät i Örebro AB
national Internet Service Provider	Ownit Broadband AB	Sandviken Energi Elnät AB, SandNet	Statnett SF

Sting Networks AB	Telcoworld	Tingsryds kommun	Wayport A/S
Storuman Kommun	Tele Wing AB	Torsås kommun	Weblink IP Phone AB
Stratos Wireless Inc.	Tele2 Sverige AB	Traffic Center AB	Venatech AB
Straznet AB	Telecom Express AB	Transaction Network Services TNS AB	Ventelo Privat AB
Streamtel AB	Telecom3 Networks AB	Transit Kabel-TV AB	Ventelo Sverige AB
Sundbyberg Stadsnätbolag AB	Teleinfo 118 800 AB	TransTK (UK) Limited	Verizon Sweden AB
Sundbybergs Bredband AB	Tele-Man AB	Tranås kommun	Vetlanda Energi & Teknik AB
Sundsvall Elnät AB	Telemar Scandinavia AB	Triangelbolaget D4 AB	Viasat AB
Supertel Sverige AB	Telenor AB	Trollhättan Energi AB	Viatel Sweden AB
Suravision AB	Telenor Connexion AB	T-Systems Denmark A/S, Swe Branch Office	Vilhelmina Kommun
Svea Billing Systems AB	Telenor Fibre Network AB	TV-Net	Vindelns kommun
Swefour AB	Telenor Sverige AB	Tyfon Svenska AB	Wireless Maingate Nordic AB
Svensk programagentur (SPA)	Telenordia	Uddevalla Energi AB	Wolane AB
Svensk Telekom	Telenordia Privat	Ulricehamns Energi AB	Voxbone SA
Svensk Växeltjänst AB	Telerabatt AB	Umeå Energi Elhandel AB	Vännäs Kommun
Svenska Kraftnät	Teleservice Bredband Skåne AB	Umeå Energi UmeNet AB	Värnamo Energi AB
Svenska Stadsnät AB	Teletek 5060 AB	Umeå kommun	Västerbergslagens Elnät AB
Svenska UMTS-nät AB	TeliaSonera AB	Unicorn Telecom AB	Västerviks Kraft Elnät AB
SYSteam Nät AB	Telitel Sverige AB	Universal Telecom/Timepiece Servicos	Växjö Energi AB
Söderhamn Teknikpark AB	Tellax AB	Uppcom AB	Vökby Bredband AB
Sölvesborgs Energi och Vatten AB	Telogic A/S	Uppsala Stadsnät AB	Ymex AB
TA Teleaddress Information AB	Telus Sverige	Uppvidinge kommun	Ystad Energi AB
Tata Communications (Sweden AB)	Teracom AB	Utfors	Zitius Service Delivery AB
TDC Sverige AB	Terraflex	Utsikt Nät AB	Ånge kommun
Tekea AB	The Cloud Networks Nordic AB	Vaggeryd Energi AB	Åre Network AB
Teknik- och stadsbyggnadsförvaltningen, LaNet	Tibro Energi Försäljning AB	Valuengine - Trading E Servicos Limitada	Åsele Kommun
Teknikbyrån i Sverige AB	Tibro kommun	Varberg Energi AB	Åstorps kommun
Teknikmejeriet AB	Tidaholms Energi AB	Vasa Läns Telefon AB	Åtvidabergs Kommun
Teknorama Data AB	Tierps Kommun / KanalTierp	Vattenfall AB	Älmhults kommunala industrifasti
TelaVox AB	Timepiece-Servicos De Consultoria Lda	Vattenfall Eldistribution AB	Älvsbyns kommun

Örecom AB
Öresundsbro konsortiet
Öresundskraft Infratjänster AB
Örkelljunga Bredband AB
Örnsat AB
Österlens Kraft AB
Östhammars Kommun
Östkraft AB
Överkalix Kommun
Övertorneå Kommun
Övik Energi AB

