INTRODUCTORY REMARKS ON THE COMPARISON OF BROADBAND INTERNET ACCESS COST

The study on the comparison of Broadband Internet Access Cost (BIAC) in the 27 EU Member States, Norway, Iceland, Japan, South Korea, Canada and the USA has required the development of a methodology in order to define the sample of broadband offers to be analysed, to define the Broadband Internet Access Cost (BIAC) itself and to make a consistent comparison of these costs.

This document presents the methodology of the study. As this methodology is very detailed at different levels, we hereafter point out some major elements that we believe to be crucial for ensuring a correct global understanding of the results of the study:

- The study covers the offers of the ISPs representing about 80% of the market (all technologies together) in each country. This means that the study is based on a representative *sample* of the market. It is however not exhaustive;
- Each broadband offer for residential clients is dealt with in the same way when comparing the costs of the offers, i.e. no *weight* in terms of uptake of the offer (e.g. number of subscribers to this offers) has been taken into account;
- Many ISPs offer consecutive and repeated *promotions*, making these offers quasi permanent. These promotions are not taken into account, although it could be argued that the cost of promotions do correctly reflect the cost of the broadband Internet access offer.
- The Broadband Internet Access Cost as it has been defined for this study consists of recurring as well as non-recurring charges. The *recurring* charges – usually expressed as monthly subscription charges by the ISPs – are increased by *additional* charges in case the level of service offered (e.g. in terms of downloadable volume or in terms of the number of hours subscribers have access to the Internet) does not correspond to a minimal service level as determined for offers with comparable speeds (cf. normalisation parameters). The *non-recurring* charges consist of all upfront installation and activation charges; as a general rule, they are depreciated over a period of 12 months.
- *7 Baskets* have been created in order to enhance *technical uniformity*. The categorisation of the offers in the sample has been made based on the download speeds of the offers. The choice of having 7 baskets is the result of a trade-off that had to be made between limiting the number of baskets to a reasonable number and defining baskets that are suitable for all the countries included in the study, regardless of the degree of development of the broadband market in each country. Consequently, it can be observed that within one basket, the cost of offers with relatively divergent speeds is compared.
- Finally, *financial uniformity* between countries has been enhanced by applying appropriate exchange rates and Euro Purchasing Power Parities (Euro PPP).

SCOPE AND LIMITS OF THE STUDY

SCOPE OF THE STUDY

"Broadband Internet Access" is defined as *an access assuring an always-on service with speeds in excess of 144 kbps*[1]. This speed is measured in download terms.

The identification of the different broadband offers is limited to those intended for *residential* subscribers. Business packages or offers for professional users only are not taken into account. However, several *residential* packages are also available to and used by small and medium enterprises (SMEs) as the speeds are also satisfying the needs of these customers. Furthermore, the study only deals with supplies at retail level, and not at wholesale level.

The study covers 33 countries: the 27 Member States of the EU, Norway, Iceland, Japan, South Korea, Canada and the USA. For the USA, three different States have been selected based on their population density: New York, California and Colorado. The two first States have a highly developed broadband access supply, whereas Colorado's is less developed.

LIMITS OF THE STUDY

It should be noted that the comparison of Broadband Internet Access Cost has a number of limitations that can be summarised as follows:

1. ***The basis for the comparison is limited to a number of parameters and characteristics.***
   Cost structures for broadband access services can be very complex which means that costs as well as the service itself can vary depending on a broad set of parameters (e.g. location of the client in terms of a specific city or even street, time of day for the consumption of additional downloadable volume, distinct prices for local or international content, usage of the ISP of its own network or not, etc.). Furthermore, it is difficult to include the value of qualitative characteristics (e.g. level of protection, available webspace, etc.) in a quantitative comparison exercise (i.e. based on the cost of the service).
2. ***The study is limited to a targeted coverage of 80%[2] of the market.***
   Given the often very high number of ISPs representing the remaining 20% of the market, it was deemed not to be feasible to cover the market fully.
3. ***The study presents an overview of what offers are available, not of what is actually consumed by the customers.***
   As no information is available on the volumes of each offer actually sold, no weight could be attributed to the different offers for which data is collected for the same country.
4. ***The study excludes discounts based on promotions.***
   Since promotions are considered – by definition[3] - limited to specific circumstances (e.g. limited in time), it was considered that these do not provide a good indication of the actual

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1 This definition of "Broadband Internet Access" is consistent with the definition used in the 13th Implementation Report of the European Commission (cf. http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/annualreports/13th/index_en.htm, Volume 2, p. 92).

2 For some countries (the Czech Republic, Lithuania and Romania), due to a significant fragmentation of the market, it was observed that the number of ISPs globally representing at least 80% of the overall market was extremely high. In those cases, a few market players were included in the sample of ISPs to ensure that it would be as representative as possible.

3 As a general rule in this study, an offer is considered as a promotion when the time to subscribe to the offer under the specific conditions mentioned, is less then 12 months or when it is aimed at a specific group of consumers (e.g. students).

cost for broadband Internet access. Some ISPs offer consecutive and repeated promotions, making these offers quasi permanent, so it could be argued that the cost of promotions do correctly reflect the cost of the broadband Internet access offer.

5. ***The normalisation of metered offers is based on theoretical parameters.***
   As no information is available on actual consumption (especially in terms of downloaded volumes and the average number of hours that the Internet was accessed) theoretical normalisation parameters have been defined. These parameters can be considered to be best estimates for the average metered offer in a specific basket, but could not be checked against actual consumption statistics.

   This theoretical normalisation cannot always be attained because of constraints that occur in reality; e.g. the theoretical parameters cannot be reached because of restrictions in the form of a maximum invoice (strict maximum amount on the monthly invoice; e.g. in Belgium, Denmark and Iceland) or the maximum usage (similar to the maximum invoice but here there is a strict maximum to the downloadable volume; e.g. in Ireland and Lithuania) and the 'fair use principle'.

   As the minimum service level set by the normalisation parameters cannot be reached in such cases, the offers concerned have not been included in the sample and are not taken into account when determining the least expensive or median offer per country.

6. ***The 7 baskets to which the offers are allocated for the comparison of the broadband access costs group offers with considerable technical differences.***
   A trade-off had to be made between limiting the number of baskets to a reasonable number and defining baskets that are suitable for all the countries included in the study, regardless of the degree of development of the broadband market in each country. Consequently, it can be observed that within one basket, the cost of offers with relatively divergent speeds is compared.

7. ***Offers included in the study are limited to 'pre-defined' packages (in contrast to 'à la carte' packages).***
   Several ISPs offer bundled offers 'à la carte', i.e. the customer can define a level of consumption for each individual service included in the package (e.g. combination of a volume of mobile call minutes, fixed call minutes, download speed for broadband Internet access, number of TV-channels). Including a cost for all these packages would require defining multiple profiles for the additional services, which would then need to be combined in different ways with the baskets defined for the broadband Internet access service. This exercise is considered to be outside the scope of this study.

In conclusion, it should be stressed that this study is not exhaustive. Consequently, it is possible that offers less expensive than those presented in this study are available on the market.

Also, in such a dynamic market, it is possible that some prices are out-of-date from the day the report is published. It is therefore important to keep the date of the data collection in mind when making use of the data.

METHODOLOGY FOR THE DATA COLLECTION

The data collection for the Broadband Internet Access Costs comparison exercise requires first a selection of ISPs per country. After that, detailed information can be collected for each of the individual relevant offers of the selected ISPs.

The following sections present the approach for the selection of the ISPs and the offers. Furthermore, an overview of the selected ISPs and the technologies offered by these ISPs are presented, as well as an indication of the high level composition of the offers in our sample.

SELECTION OF ISPS

CRITERIA APPLIED FOR THE SELECTION OF THE ISPS

For each of the 33 countries, the top Broadband Internet Services Providers, ranked by number of subscribers, have been identified, and the largest ISPs representing globally at least 80% of the overall national market were selected. These ISPs are presented below.

For some countries, due to a significant fragmentation of the market, it was observed that the number of ISPs globally representing at least 80% of the overall market was extremely high (e.g. The Czech Republic, Lithuania and Romania). In those cases, a few small market players were included in the sample of ISPs to ensure that it would be as representative as possible.

INFORMATION SOURCES

Information coming from a number of sources has been analysed and cross-checked for defining the sample of ISPs per country. For most of the countries, information on the market shares per ISP, or on the list of ISPs representing globally over 80% of the total market, was obtained directly from the National Regulatory Authority (NRA). For other countries, information was found and cross-checked in various publications and databases regarding broadband statistics.

PERIOD UNDER CONSIDERATION

The most recent information on the market shares per ISP has been requested and searched for systematically. In practice, all data concerning the market shares essentially relates to the second semester of 2007, and very often figures representing the situation end of December 2007 were used.

SELECTION OF THE BROADBAND OFFERS OF THE ISPS

CRITERIA APPLIED WHEN COLLECTING AND SELECTING THE BROADBAND OFFERS

For all ISPs selected and presented in this document, information was collected for all their broadband offers available to residential subscribers, independent of whether they are:

- Non-bundled or bundled with other services (the categories of bundles considered are: Internet Access + Fixed Telephony; Internet Access + Television; Internet Access + Fixed Telephony + Television);
- Unmetered or time-metered / volume-metered;
- Based on xDSL, Cable or any other technology.

It was observed that ISPs in some countries also consider a connection with a speed of 128 kbps as a broadband offer. Information on these offers was also collected, but is excluded from the baskets used for the comparison analysis.

Furthermore some countries (e.g. Lithuania, State of California) have offers of which the prices are based on negotiations. These offers have not been taken into account as these negotiations are not a good basis for cost comparison.

In total, data on 1856 offers was collected. 22 of all collected offers have speeds up to 144 kbps. 21 of all collected offers could not offer the assumed minimum service level because of the system of maximum invoice or maximum usage. 7 offers were negotiable on the price. Consequently, the comparison analysis relates to 1806 offers.

INFORMATION SOURCES

The data required for the BIAC comparison have been collected from primary sources (i.e. the ISPs), mainly via the information that is published on their websites. In addition, ISPs were contacted directly by telephone or e-mail in cases where further clarification regarding the published information was needed.

PERIOD UNDER CONSIDERATION

The financial and technical parameters for all of the selected broadband offers in this second part of the report were collected in the period between April 1st and April 15th, 2008.

OVERVIEW OF THE TECHNOLOGIES INCLUDED IN THE SELECTED OFFER

In the sample of selected offers several technologies for Internet data transmission can be observed.

'xDSL' stands for digital subscriber line and represents a family of technologies that provide digital data transmission over the wires of a local telephone network (e.g. ADSL, ADSL2+, SHDSL, VDSL, …).

'Cable Internet' works by using TV channel space for data transmission, with certain channels used for downstream transmission, and other channels for upstream transmission.

'Satellite Internet' uses a satellite in geostationary orbit to relay data from the ISP to its customers.

'FTTH', Fiber to the Home, is defined as a telecommunications architecture in which data transmission is provided over optical fibre cables extending from the telecommunications operator's switching equipment to (at least) the boundary of the home living space or business office space. Some of the FTTH offers in the sample are based on an architecture using LAN techniques.

'Plug & Play' can be used with technologies like WiMAX and 3G. With the exception of 'WiMAX at home'[4] these technologies are characterised by the fact that the broadband Internet

[4] A specific offer, whereby a modem is fixed at the outside of the customer's premises.

access is not limited to a specific location, as opposed to where the Internet access is provided through a telephone line, cable or fibre. The name of the category 'Plug & Play' refers to the ability of a computer system to configure automatically expansion boards and other devices. You should be able to plug in a device and run it.

It can also be noted that the same ISP is sometimes offers broadband based on different technologies. A detailed overview of what technologies are offered by which ISPs can be found below.

OVERVIEW OF THE ISPS SELECTED FOR EACH COUNTRY, INCL. THE TECHNOLOGIES USED

The selected ISPs have been sorted alphabetically and according to their status on the market, i.e. incumbent[5] or new entrant.

Country	ISP	Status	Technology
Austria	Telecom Austria	Incumbent	xDSL
	Tele2UTA	New Entrant	xDSL
	UPC	New Entrant	xDSL and Cable
Belgium	Belgacom	Incumbent	xDSL
	KPN Tele2	New Entrant	xDSL
	Telenet	New Entrant	Cable
Bulgaria	BTC Net	Incumbent	xDSL
	Cable Tel	New Entrant	Cable and FTTH
	Eurocom	New Entrant	Cable
	Internet Group	New Entrant	Cable and FTTH
	Net is Sat	New Entrant	FTTH
	Powernet	New Entrant	Cable and FTTH
	Spectrum Net	New Entrant	xDSL
Canada	Bell Canada	Incumbent	xDSL and Plug & Play
	Shaw	Incumbent	Cable
	Videotron	Incumbent	Cable
	Rogers	New Entrant	Cable and Plug & Play
	Telus	New Entrant	xDSL
Cyprus	Cytanet	Incumbent	xDSL
Czech Republic	Telefónica 02	Incumbent	xDSL

5 Incumbents are defined as the organisations enjoying special and exclusive rights or de facto monopoly for provision of voice telephony services before liberalisation, regardless of the role played in the provision of access by means of technologies alternative to the PSTN.

Country	ISP	Status	Technology
	GTS Novera	New Entrant	xDSL
	Radiokomunikace	New Entrant	xDSL and Satellite
	T-mobile	New Entrant	xDSL
	UPC	New Entrant	Cable
Denmark	TDC	Incumbent	xDSL
	Cybercity	New Entrant	xDSL
	Dansk Kabel TV	New Entrant	Cable
	Telia-Stofa	New Entrant	xDSL
Estonia	Elion	Incumbent	xDSL, Cable and Plug & Play
	Starman	New Entrant	Cable
	STV	New Entrant	Cable and FTTH
Finland	Elisa	Incumbent	Cable, xDSL and Plug & Play
	Sonera	Incumbent	xDSL, Cable and FTTH
	DNA group	New Entrant	xDSL, Cable
	Finnet group	New Entrant	xDSL, Cable
France	Orange	Incumbent	xDSL
	Free	New Entrant	xDSL
	Neuf Telecom	New Entrant	xDSL and FTTH
Germany	Deutsche Telecom	Incumbent	xDSL and Satellite
	Alice	New Entrant	xDSL
	Arcor	New Entrant	xDSL
	Freenet	New Entrant	xDSL
	United Internet	New Entrant	xDSL
	Versatel	New Entrant	xDSL
Greece	OTE	Incumbent	xDSL
	HOL	New Entrant	xDSL
Hungary	T-Com	Incumbent	xDSL
	T-Online	Incumbent	xDSL, Cable and Plug & Play
	EnterNet	New Entrant	xDSL
	Externet	New Entrant	xDSL
	GTS-Datanet	New Entrant	xDSL
	Invitel	New Entrant	xDSL and Plug & Play
	UPC	New Entrant	Cable
Iceland	Siminn	Incumbent	xDSL
	OG Vodafone	New Entrant	xDSL
Ireland	Eircom	Incumbent	xDSL

Country	ISP	Status	Technology
	BT Ireland	New Entrant	xDSL
	Digiweb	New Entrant	xDSL, Cable, Satellite and Plug & Play
	Irish Broadband	New Entrant	xDSL and Plug & Play
	UPC	New Entrant	Cable
Italy	Telecom Italia	Incumbent	xDSL and Satellite
	Fastweb	New Entrant	xDSL
	Libero	New Entrant	xDSL
	Tiscali	New Entrant	xDSL
Japan	NTT East Japan	Incumbent	xDSL and FTTH
	NTT West Japan	Incumbent	xDSL and FTTH
	Jupiter Telecommunications	New Entrant	Cable
	Yahoo Japan	New Entrant	xDSL and FTTH
Korea	Korea Telecom	Incumbent	xDSL, Cable, FTTH and Satellite
	Hanaro Telecom	New Entrant	xDSL, Cable and FTTH
	Powercomm (Xpeed)	New Entrant	Cable
Latvia	Lattelecom	Incumbent	xDSL and Plug & Play
	Balticom	New Entrant	FTTH
	Baltinet Data	New Entrant	xDSL
	Baltkom TV	New Entrant	Cable
	Dautkom TV	New Entrant	Cable, FTTH
	Izzi	New Entrant	Cable and Plug & Play
	Livas Net	New Entrant	Cable
	MPE NET	New Entrant	Cable
	PRONETS	New Entrant	xDSL and FTTH
Lithuania	Teo	Incumbent	xDSL and FTTH
	Balticum TV	New Entrant	xDSL, Cable and FTTH
	Dokeda	New Entrant	FTTH
	Lietuvos radijo ir televizijos centras	New Entrant	Plug & Play
	Omnitel	New Entrant	Plug & Play
	Penki! Kont. komun. centras	New Entrant	FTTH
	Telerena	New Entrant	FTTH
Luxembourg	P&T Lux	Incumbent	xDSL and Cable
	Cegecom	New Entrant	xDSL and Cable
Malta	Go (Maltacom)	Incumbent	xDSL
	Onvol	New Entrant	Cable
The Netherlands	KPN	Incumbent	xDSL

Country	ISP	Status	Technology
	Casema	New Entrant	Cable
	Essent @home	New Entrant	xDSL
	Het Net	New Entrant	xDSL
	Orange	New Entrant	xDSL
	Planet Internet	New Entrant	xDSL
	Tele2	New Entrant	xDSL
	UPC	New Entrant	Cable
	XL4ALL	New Entrant	xDSL
Norway	Telenor	Incumbent	xDSL and Cable
	Get	New Entrant	xDSL
	Nextgentel	New Entrant	xDSL
	Tele2	New Entrant	xDSL
	Ventelo	New Entrant	xDSL
Poland	TP	Incumbent	xDSL
	Aster Group	New Entrant	Cable
	Multimedia Polska	New Entrant	Cable
	UPC Polska	New Entrant	Cable
	Vectra	New Entrant	Cable
Portugal	PT.COM	Incumbent	xDSL
	Cabovisao	New Entrant	xDSL and Cable
	Novis	New Entrant	xDSL
	ZON (TV Cabo)	New Entrant	xDSL and Cable
Romania	Romtelecom	Incumbent	xDSL
	Air Bites	New Entrant	Plug & Play
	Digitec	New Entrant	Cable
	RCS & RDS	New Entrant	Cable and FTTH
	UPC Romania	New Entrant	Cable
Slovakia	T-COM (Slovak Telekom)	Incumbent	xDSL
	Orange	New Entrant	Plug & Play and FTTH
	T-mobile	New Entrant	Plug & Play
	UPC	New Entrant	Cable
Slovenia	Telekom Slovenije	Incumbent	xDSL
	UPC Telemach	Incumbent	Cable
	Amis	New Entrant	xDSL
	T-2	New Entrant	xDSL and FTTH
Spain	Telefonica	Incumbent	xDSL
	ONO	New Entrant	Cable
	Orange	New Entrant	xDSL and Plug & Play
Sweden	Telia Sonera	Incumbent	xDSL, LAN and Plug & Play

Country	ISP	Status	Technology
	Brebandsbolaget	New Entrant	xDSL, LAN and Plug & Play
	ComHem	New Entrant	Cable
	Glocalnet	New Entrant	xDSL
The United Kingdom	BT	Incumbent	xDSL
	BSkyB	New Entrant	xDSL
	TalkTalk/AOL	New Entrant	xDSL
	Tiscali UK	New Entrant	xDSL
	Virgin Media	New Entrant	xDSL and Cable
USA			
State of California	AT&T	Incumbent	xDSL
	Verizon	Incumbent	xDSL and FTTH
	Charter Communications	New Entrant	xDSL
	Comcast	New Entrant	Cable
	Cox Communications	New Entrant	xDSL
	Earthlink	New Entrant	xDSL, Cable and Satellite
	Time Warner Cable	New Entrant	Cable
State of Colorado	AT&T	Incumbent	xDSL
	Verizon	Incumbent	xDSL and FTTH
	Charter Communications	New Entrant	xDSL
	Comcast	New Entrant	Cable
	Earthlink	New Entrant	xDSL, Cable and Satellite
	Time Warner Cable	New Entrant	Cable
State of New York	AT&T	Incumbent	xDSL
	Verizon	Incumbent	xDSL and FTTH
	Charter Communications	New Entrant	xDSL
	Comcast	New Entrant	Cable
	Earthlink	New Entrant	xDSL, Cable and Satellite
	Time Warner Cable	New Entrant	Cable

METHODOLOGY FOR DETERMINING AND COMPARING THE BROADBAND INTERNET ACCESS COST

The following sections outline the methodology that has been applied for determining and comparing the Broadband Internet Access Cost of the selected offers.

DEFINITION OF THE BROADBAND INTERNET ACCESS COST (BIAC)

The Broadband Internet Access Cost has been defined as the total monthly charges of the broadband offer, composed of:

– One-time non-recurring charges;

– Monthly recurring charges.

NON RECURRING CHARGES

The non-recurring charges can include the following initial cost elements:

- installation;
- modem or router;[6]
- software driver;
- activation;
- additional administrative charges;
- television decoder;
- other charges.

In order to obtain a cost on a monthly basis, the one-time non-recurring charges are divided over assumed standard contract duration of 12 months. This period was selected after analysis of the contract durations for broadband services that are currently most common.

If however, for a specific offer, it is not possible to end the contract after 12 months without a penalty, the actual contract duration is taken into account, in order to avoid overestimating the actual importance of the non-recurring charges per month.

Some ISPs present multiple options in terms of contract duration for the same broadband offer. This has been dealt with as follows:

If a 12-month option is available, this one is selected for the Broadband Internet Access Costs comparisons.

- If the longest option still implies a period shorter than 12 months, then the longest period is taken into account.
- If the shortest option is a contract duration of a period longer than 12 months, then the shortest period is selected.

Offers with very short contract durations (and no options over a longer period) have been observed in the following countries:

[6] The less expensive option of renting or buying a modem is chosen. If different types of modems are offered, again the least expensive option is chosen.

- Contract duration of 1 month: Sweden (3);
- Contract duration of 3 months: Malta (6);
- Contract duration of 6 months: Denmark (32), Iceland (11), Ireland (18), Latvia (8), State of California (2), State of Colorado (2), State of New York (2).

The numbers in brackets indicate the number of offers per country, present in the sample.

The installation and activation charges will most often depend on the 'status' of the customer (i.e. what services the customer already subscribed to or what networks is the customer already connected to when determining the additional cost for activating broadband Internet access services). Therefore, it was decided to assume that access to the required *physical infrastructure* is already available to the customer, i.e. that the customer is indeed already connected to e.g. a copper telephone line, cable or optical fibre. Therefore, non-recurring charges for the installation of this infrastructure were not taken into account.

The installation and/or activation charges for a *specific service* that is part of the offer (bundled or not) will be considered as relevant non-recurring charges for the BIAC study. This implies that the non-recurring cost of an offer that contains solely Internet Access services will not e.g. include the non-recurring cost of the installation and/or activation of the fixed telephone service that one is obliged to subscribe to obtain the xDSL service.

Finally, in the case of 'Plug & Play' and Satellite enabled broadband access services, no installation of a physical connection is required, and hence the installation and activation charges included in the Broadband Internet Access Cost will automatically correspond to those of a customer with the status assumed above.

MONTHLY RECURRING CHARGES

The monthly recurring charges correspond to the charges for the broadband access service only (as opposed to e.g. the PSTN rental line fee).

The possibility of isolating the cost of the broadband access service in bundled offers was analysed, too, but it was concluded that it required too many assumptions to lead to a monthly charge for broadband services only than could be considered as being reliable.

In addition to the fact that an important part of the offers are bundled, it was also observed that a very wide variety of tariff structures is applied by the different ISPs and in the different countries. In some cases, these structures require additional decisions regarding which charges of a specific offer will be considered for the purpose of the study on the Broadband Internet Access Costs.

As stated above, in some offers no exact prices are reflected as these are considered subject to negotiation. These offers were left out of the sample as they did not represent a good basis for comparison.

The following examples illustrate some of the tariff structures encountered and the way they have been dealt with:

- In some offers the tariff only includes unlimited access to national internet content (e.g. Iceland – Og Vodafone – 'unlimited domestic download'). To have access to international content one needs to pay per time unit. In these cases only the tariff structure of the international download content was taken into account and the offer is considered volume-metered.

- In some countries basic recurring charges differ according to the region or the city of residence (e.g. Finland– Sonera). In these cases we considered the tariffs of the bigger cities and regions.

DISCOUNTS AND EXTRA CHARGES

Finally, the assumption was made that discounts based on limited time[7] and/or limited geographical promotions or discounts for 'grouped' subscriptions (e.g. for an apartment building or houses from the same neighbourhood) were not to be taken into account.

Also, if it is indicated that e.g. an extra fee will be charged when a specific form of payment (e.g. direct debit) is not respected, these extra charges are not taken into account. Conversely, when a discount can be obtained when accepting e.g. direct debit for payments, this discount is not taken into account either.

COMPARISON OF THE BROADBAND INTERNET ACCESS COST

In order to make comparisons between offers as relevant as possible, it is necessary to do so on the basis of similarities. To get such a uniform basis of comparison, a threefold methodology is applied. Firstly, 7 representative user baskets have been defined, and each offer is placed in one of these baskets; secondly, a total normalised monthly cost is calculated, composed of recurring and non-recurring cost elements for all of the services included in the offer; and finally, the total monthly costs in the different countries are compared by not only using nominal exchange rates, but also by using purchasing power parities.

This approach ensures both:

- Uniformity in technical terms and
- Uniformity in financial terms

UNIFORMITY IN TECHNICAL TERMS

The sample of broadband offers consists of offers that are characterised by different speeds and by different degrees of limitation on access to the internet (both in terms of downloadable volume or number of hours provided for access to the Internet).

Therefore, for comparison, different approaches can be taken, e.g.:

1. Comparison of the cost of each of the offers with the same download speed, regardless of whether access to the Internet is limited;
2. Comparison of the cost of all offers with unlimited access to the Internet, regardless of the download speed;
3. Comparison of the cost of all offers, regardless of download speed or the extent to which access to the Internet is limited.

The first approach was assessed as providing the most worthwhile results. Therefore, in a next

[7] An offer is considered a promotion when the time to subscribe to the offer under the specific conditions mentioned is less then 12 months or when it is aimed at a specific group of consumers (e.g. students).

step, the offers were first classified according to representative user profiles (called baskets) according to the download speed. Offers with different speeds, but falling between the same lower and upper limits (excluding the lower and including the upper limit) are placed in the same basket. In the chart representing the least expensive charges per country, the nominal download limit is indicated.

Second, within the same basket, the cost of offers with limited access to the Internet (= metered offers) will be normalised to a reasonable access level (both in terms of downloadable volumes and number of hours) by adding a cost for additional downloadable volume or additional hours to access the Internet. In such a way, the normalisation improves the comparability of metered and unmetered offers in the same basket.

Finally, for all three services that can be part of the offers in our sample, a list of additional technical parameters were selected, enabling a further and more qualitative comparison.

DEFINITION OF BASKETS

Based on an analysis of all of the 1806 broadband offers making up the total sample, 7 representative baskets were defined. The percentage of the total number of offers available in the sample does not take into account the number of subscribers for each of these offers.

Breakdown of all offers	Number of Offers in sample (all countries)	% of Offers in sample (all countries)
	April 1st - 15th, 2008	
Basket 1: 144-512 (included)	196	10,85%
Basket 2: 512-1024 (included)	239	13,23%
Basket 3: 1024-2048 (included)	305	16,89%
Basket 4: 2048-4096 (included)	250	13,84%
Basket 5: 4096-8192 (included)	331	18,33%
Basket 6: 8192-20Mbps (included)	316	17,50%
Basket 7: 20+Mbps (included)	169	9,36%
TOTAL	1806	100,00%

Table 1: Breakdown of the offers in the sample over the 7 baskets

NORMALISATION OF OFFERS

Both metered and unmetered offers are available in the same basket. **M**etered offers are those with a limited number of hours per month during which access to the Internet is provided (i.e. time-metered) or of downloadable volume (i.e. volume-metered). Unmetered offers are those without usage limits.

In some cases, the costs of offers with limited access to the Internet (i.e. metered offers) provide only a very limited access and need to be normalised to a reasonable access level (both in terms of downloadable volumes and a number of hours). These reasonable levels are referred to as normalisation parameters and have been applied to approximately one fourth of all metered offers.

Normalisation of the Internet Access Service

Based on an analysis of all of the 1806 broadband offers, the following normalisation parameters have been defined for each basket:

Basket	Normalisation parameters for the Internet Access Service	
	Volume of data (GB)	Hours per month
144-512	**1**	**20**
512-1024	**1**	**20**
1024-2048	**2**	**20**
2048-4096	**10**	**20**
4096-8192	**30**	**20**
8192-20Mbps	**30**	**20**
20+Mbps	**30**	**20**

Table 2: Overview of the normalization parameters per basket

The normalisation parameters above represent the estimated average downloadable volumes or number of hours per month for each type of basket. For a particular basket, if the volume or number of hours of access to the Internet per month exceeds the levels provided for in the basic metered offer, additional charges per gigabyte downloaded or per hour will be added to the basic monthly charges. The sum of the cost of the basic metered offer and the additional charges will be used for comparison with the unmetered offers.

The inclusion of additional charges to obtain the reasonable level of service presented in Table 2 sometimes results in very high total monthly costs. It was observed that these total monthly costs in some cases comprised:

- a very low basic monthly charge (sometimes even equal to 0) and very high additional charges ("pay per use" offers);
- a basic monthly charge that is quasi comparable with an unmetered offer, combined with significant additional charges.

It can be assumed that these offers target users with limited service requirements (i.e. lower than the reasonable level of service indicated in **Table 2**). It can thus be assumed that the very high total monthly costs, calculated based on the reasonable levels of service, will most often not be paid by e.g. customers who only use the Internet for sending and receiving emails.

In other words, it is quite probable that in reality, customers will be paying a lower total monthly cost than that determined based on the normalisation parameters. However, as these low-usage costs are not considered to be comparable with the cost of an unmetered offer, abstraction was made of this probability in the comparison analysis. This means that the same normalisation parameters were applied to all metered offers of the same basket.

It should be noted that the normalisation parameters comprise best estimates (based on e.g. the average downloadable volume or hours included per category that are observed in the sample). However, as no further accurate information could be obtained on the actual average downloaded volumes and hours spent on the Internet, the impact of the normalisation on the results of the study was evaluated. In other words, by using simulations and sensitivity analysis, the extent of the impact of leaving out the normalisation step on the offers that were selected as being the least expensive ones was checked.

It was concluded from the analysis that the normalisation impact was rather limited. In some countries (like Denmark, Lithuania, Slovakia etc) where volume-based offers are widespread the normalisation had an influence on the selection of the least-expensive offer. In these cases the normalised charge was a more realistic representation of the cost as the basic recurring charges were very low and the extra costs per GB and per hour were rather significant.

The additional cost per gigabyte downloaded (for the volume-metered offers) or the 'cost per hour' (for time-metered offers) is most often indicated in the offer. If this is not the case, these parameters are estimated by dividing the recurring charges of the offer by the volume of data (or hours) that is included in the basic offer.

Some ISPs differentiate the additional charges as a function of the hours of the day. For these cases, the charges for the daytime were taken into account, similar to the decision on the different tariff structures.

Metered offers are time-metered *or* volume-metered. In the April 2008 sample, there were no offers with both limitations.

As the normalisation is related to the volume of the service (in terms of Gbytes for the volume-metered offers and in terms of hours for time-metered offers), it has no impact on the non-recurring charges.

UNIFORMITY IN FINANCIAL TERMS

In order to make the offers uniform in financial terms, appropriate exchange rates and Euro Purchasing Power Parities (Euro PPP) have been applied. Also, the effect of different levels of VAT percentages has been analysed.

The table below lists the parameters that have been used in order to make the data more uniform in financial terms[8]:

Country	VAT percentage	Local Currency (LC)	1 EURO in LC	EURO PPP
Austria	**20%**	**EUR**	**1,00**	**1,06**
Belgium	**21%**	**EUR**	**1,00**	**1,08**
Bulgaria	**20%**	**BGN**	**1,96**	**0,84**
Canada	**6%**	**CAD**	**1,60**	**1,92**
Cyprus	**15%**	**EUR**	**1,00**	**0,89**
Czech Republic	**19%**	**CZK**	**25,02**	**17,62**
Denmark	**25%**	**DKK**	**7,46**	**10,33**
Estonia	**18%**	**EEK**	**15,65**	**11,11**
Finland	**22%**	**EUR**	**1,00**	**1,18**
France	**19,60%**	**EUR**	**1,00**	**1,10**
Germany	**19%**	**EUR**	**1,00**	**1,05**
Greece	**19%**	**EUR**	**1,00**	**0,87**
Hungary	**20%**	**HUF**	**254,74**	**164,76**
Iceland	**24,50%**	**ISK**	**116,26**	**128,70**
Ireland	**21%**	**EUR**	**1,00**	**1,19**

[8] Sources: Exchange rate: online European Central Bank, foreign exchange rates (average rate of period 01/04/2008 -15/04/2008). EURO PPP: Eurostat database (07/05/2008). Except for Canada and Korea for which PPP is based on the latest online OECD figures (2007 figures collected on 07/05/2008)

Country	VAT percentage	Local Currency (LC)	1 EURO in LC	EURO PPP
Italy	**20%**	**EUR**	**1,00**	**1,05**
Japan	**5%**	**JPY**	**159,92**	**141,75**
Korea	**10%**	**KRW**	**1.539,92**	**1175,93**
Latvia	**18%**	**LVL**	**0,70**	**0,49**
Lithuania	**18%**	**LTL**	**3,45**	**2,11**
Luxembourg	**15%**	**EUR**	**1,00**	**1,07**
Malta	**18%**	**EUR**	**1,00**	**0,70**
Norway	**25%**	**NOK**	**7,98**	**10,95**
The Netherlands	**19%**	**EUR**	**1,00**	**1,07**
Poland	**22%**	**PLN**	**3,46**	**2,36**
Portugal	**21%**	**EUR**	**1,00**	**0,85**
Romania	**19%**	**RON**	**3,68**	**2,05**
Slovakia	**19%**	**SKK**	**32,39**	**20,58**
Slovenia	**20%**	**EUR**	**1,00**	**0,77**
Spain	**16%**	**EUR**	**1,00**	**0,92**
State of California	**8,25%**	**USD**	**1,57**	**1,20**
State of Colorado	**7,72%**	**USD**	**1,57**	**1,20**
State of New York	**8,38%**	**USD**	**1,57**	**1,20**
Sweden	**25%**	**SEK**	**9,38**	**11,01**
The UK	**17,50%**	**GBP**	**0,79**	**0,79**

Table 3: Exchange rates, Euro PPP and VAT percentages