Response to the European Commission's Draft Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU

10 September 2008

Executive Summary

The European Commission issued its draft Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates on 26 June 2008.

Tesco Mobile exists as a mobile virtual network operator (MVNO) in both the Republic of Ireland and the United Kingdom. The two operations are set up in different manners but the Recommendation would have a significant impact on Tesco Mobile in both countries.

The Commission argues in its draft Recommendation that mobile termination prices should be set on a cost based approach which attributes all common costs and coverage costs to retail activities. This is a long move towards a receiving party pays model which will have a detrimental impact [✂].

There seems to be a misunderstanding that new entrant or smaller operators will have a net flow of minutes from their network to the larger networks. This is not generally true. Whether or not it is the case depends entirely on the average calling behaviour of the network's customers.

Tesco Mobile has been successful in rolling out an attractive service to prepaid customers. These customers overall receive a very similar number of calls to the ones that they make.

If the rates for mobile call termination were to be substantially reduced, there would need to be an increase in revenue from the network's customers. We demonstrate how this is achieved in the United States with prepaid customers. Unsurprisingly, the proportion of prepaid customers in the US is substantially lower than in Europe. Low spending customers do not find the American prepaid service at all attractive.

Consumers who can afford regular monthly payments for large buckets of minutes are unlikely to be adversely affected by the Commission's proposals. Such customers will probably pay much the same as currently even if they are having their minute allocation deducted for incoming calls.

On the other hand, [✂] customers will be adversely affected by the Commission's proposals. It is disappointing that the Commission has not considered the social impacts. One of the great successes of the mobile industry over the last few years has been to enable citizens from across the social spectrum to receive the benefits of modern communications. Individuals can communicate personally in a way that suits their personal finances. The Commission could be endangering this situation.

If the Commission's proposals were to be implemented there is a strong likelihood that the penetration rate for mobile phones would decline. [✂] It is unfortunately these individuals who are now totally reliant upon mobile phones for their communication needs.

Tesco Mobile does not argue against cost based mobile termination rates. Both incoming and outgoing call prices should be based on true costs. Rather, we make the argument that if incoming calls are priced below cost there will be necessary revenue alterations [✂].

The Commission's proposals would have the effect of assisting those network operators who are targeting high postpay customers with large bundles of minutes. These operators will have direct

incentives to encourage their customers to make calls to other networks. Operators who serve low usage customers often on a prepay basis who tend to receive as many calls as they make will find that they need to increase prices [✂].

The Commission should be encouraging a level playing field for competition, not skewing the competition in favour of one type of network operator which has chosen a particular marketing strategy. The Commission also needs to think carefully about the impact of its proposals on those more disadvantaged citizens. To put in proposals which would work to the benefit of high calling customers at the expense of low users would be a retrograde step. [✂]

1. MVNOs bring innovation for particular segments

Tesco Mobile UK launched in 2003 and now has [✂] million customers. Tesco Mobile Ireland launched in October 2007 and at the end of July 2008 had [✂] customers.

Tesco has focussed in its supermarket on straightforward, transparent, effective pricing. This approach has been brought to mobile telephony.

Our Price Plans

Tesco Mobile - The low rate, flat rate mobile network

At Tesco Mobile, we asked people what they wanted most from their calling plan, and most people said they wanted a simple plan – one that was clear and straightforward – and would save them money.

And that's what we're giving you. A flat rate price plan no matter what time of day. The same rate, whether you're calling another mobile network, or a fixed-line phone.

So, with Tesco Mobile, you'll always know where you are, with calls for just 20c per minute and 9c texts, to anyone anytime.

Anyone, Anytime Price Plan	
Use	**per minute or message charge**
Standard ROI fixed-lines & mobiles - all day	20c
Text - ROI mobiles	9c

Figure 1 - Tesco Mobile Ireland calling plan

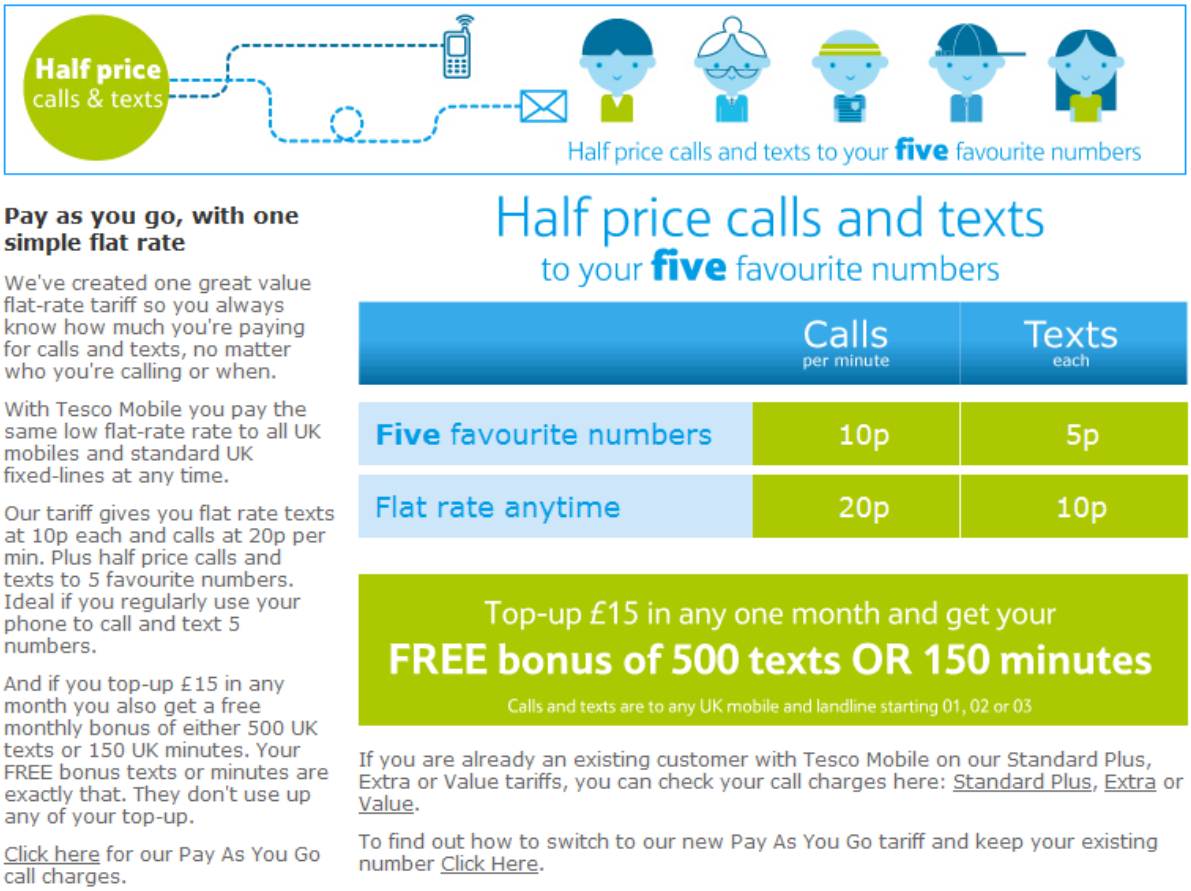


Figure 2 - Tesco Mobile UK calling plan

2. MVNOs serve particular market segments

MVNOs in general serve particular parts of the marketplace. They can focus on specific needs of customers in ways that large scale operators with their reach across the whole market can find uneconomic to serve. It is this market segmentation which encourages mobile operators to allow MVNOs to use their radio networks. MVNOs can reach specific types of customers and meet their needs either through tailored products or by finding ways to reach these customers through easily available distribution.

Tesco Mobile has used its stores and internet presence as a route to reach particular customers. Initially Tesco Mobile has focussed on the needs of those customers who find prepaid mechanisms attractive.

Prepaid customers do not pay monthly charges. Indirect charging such as the expiry of top up vouchers after a certain period or minimum charges per day are not a feature of the Irish and UK mobile markets. These features were previously used but operators found that removing such charges attracted customers. In other words, there were strong indicators through the competitive market that demonstrated customers did not like such minimum charges.

All costs for prepaid customers thus have to be recovered from voice and text calls.[1] There are no separate revenue streams.

The MVNO business is characterised by slim margins. From the very nature of MVNOs with their concentration on particular niches, there are no excess profits to be driven out. Cost structures are streamlined. For instance, Tesco Mobile Ireland has a team of [✂] people running the whole operation, Tesco Mobile UK has a team of [✂]. Activities are sub-contracted to third parties on a competitive basis. There is very limited opportunity to reduce costs.

The commercial relationship each MVNO will have with its host network will vary. A change in the termination rate for the host network or for the MVNO itself, depending on the type of MVNO, will have a direct impact on the financial structure of the MVNO.

Without excess profits to soak up the effect and very limited room for manoeuvre, a reduction in termination revenue will of necessity require other revenue streams to change. This could mean that outgoing call prices increase, that handset prices increase or that charges are raised on incoming calls. Other options are to charge daily usage fees or to change voucher top up expiry policies. Each MVNO will make its own decision as to how to balance its financial situation but there will be a clear impact on the MVNO's customers.

3. The impact of the Commission's proposals

Commissioner Vivienne Reding has indicated her enthusiasm for moving towards receiving party pays.

> **'Users expect the mobile web to be as open and easy to use as the fixed line internet.** In fact, they don't want to see a difference at all in terms of use or in terms of costs. For European consumers this is clear, this will be the future. The only question is for the European industry, how quickly will you make this transition? The slower industry is to react the more painful and difficult will be the transition to open platforms and flat-rate billing.
>
> 'In making this transition, **a crucial area of action will be interconnection rates**. **We have the situation today that mobile termination rates are at times nine times higher than fixed termination rates.** As you also know, mobile termination rates across Europe vary by up to an order of magnitude. This means that interconnection between (IP-based) fixed and mobile networks are subject to enormous variations.
>
> 'The conclusion I draw is that the European industry is a very long way from establishing a Mobile Internet based on "bill and keep charging models". I do believe this will come, but I would expect much more will in the industry to move quickly on this essential point of transition to the Mobile Internet. If Europe's mobile industry were to be serious about mobile convergence, you would certainly have to bring down mobile termination charges more aggressively.'[2]

[1] Minor revenues can also come from picture messaging and data services. These are not much used or are unavailable to TM customers.

[2] Speech 08/70 11 Feb 2008 – highlights added
http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/08/70&format=HTML&aged=1&language=EN&guiLanguage=en

The Commission's proposals go a long way in the direction of receiving party pays (RPP) or bill and keep. The proposed reduction in mobile termination rates will have to be compensated elsewhere. Prepay customers do not pay subscriptions. Various minimum charges could be introduced. The only real alternative is to start charging to receive calls. All of the evidence is that customers, and particularly those paying on a call by call basis, would find paying to receive calls a most unwelcome development.

For postpay customers with large bundles of minutes it may not be an issue as they are already paying a fixed sum per month. For prepay customers lower termination rates will have large implications. It is instructive to consider the position in the United States where RPP has always been the charging structure.

US operators have in recent years introduced prepayment methods for customers who prefer this approach. Examples of prepay calling plans are included at Appendix 1.

Incoming calls have to be paid for as is standard in the American approach. There are also minimum charges. Customers either have to pay at least $1 per day when calls cost around 10¢ per minute or pay between 25¢ and 30¢ per minute. If a low use customer receives one call in a day they will either be charged $1 on the minimum cost or up to 35¢.

Prepaid phones are more expensive to use in the USA than in Europe. In Europe many customers keep their phones for occasional use or to mainly receive calls. Prepaid amounts are kept on the account for a long period of time. In the US such an approach is not commercially viable. Typically customers will have to pay at least $30 a month to maintain the account. Tesco Mobile's experience is that the average customer pays [✂] (Ireland) or [✂] (UK) per month for outgoing calls. [✂]

The difference in minimum expenditure may well account for the disparity in penetration between Europe and the US. Penetration in Ireland is 117% and in the UK is 119%[3] compared to the US of 84%. In Europe poorer customers can use the phone primarily to receive calls or just to make the occasional outgoing call. Such a calling pattern would be substantially more expensive in the US. The socially disadvantaged customer is effectively precluded from having a mobile phone. Customers need to be of a certain financial worth before they can afford a mobile phone.

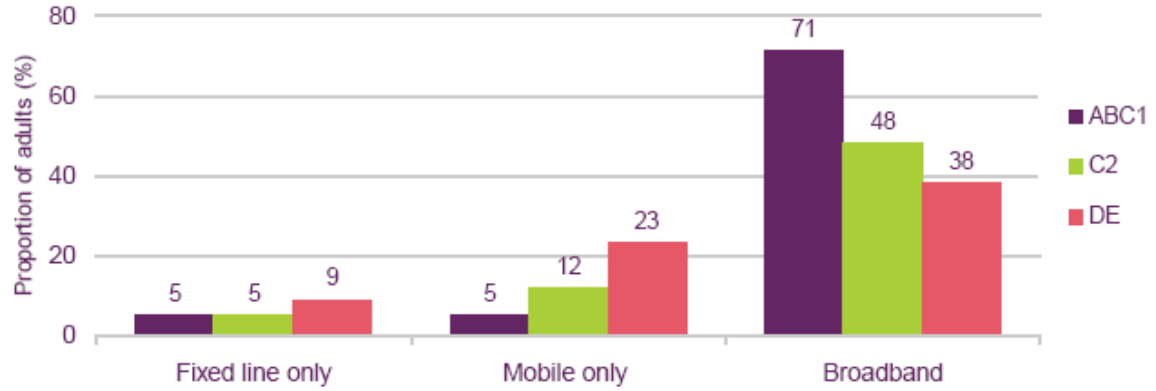
Introducing prepaid payment plans which are of similar form to those in the US may well have a large social cost. The Commission's recommendation may well have the effect of starting to make mobile telephony unaffordable [✂] in our societies.

4. Prepaid customers

Ofcom's survey of the Communications Market 2008 shows that 23% of C2DEs have mobile only connections i.e. they have no fixed telephony. (Figure 5.60)

[3] EC 13th Implementation Report Country Chapters for Ireland and UK

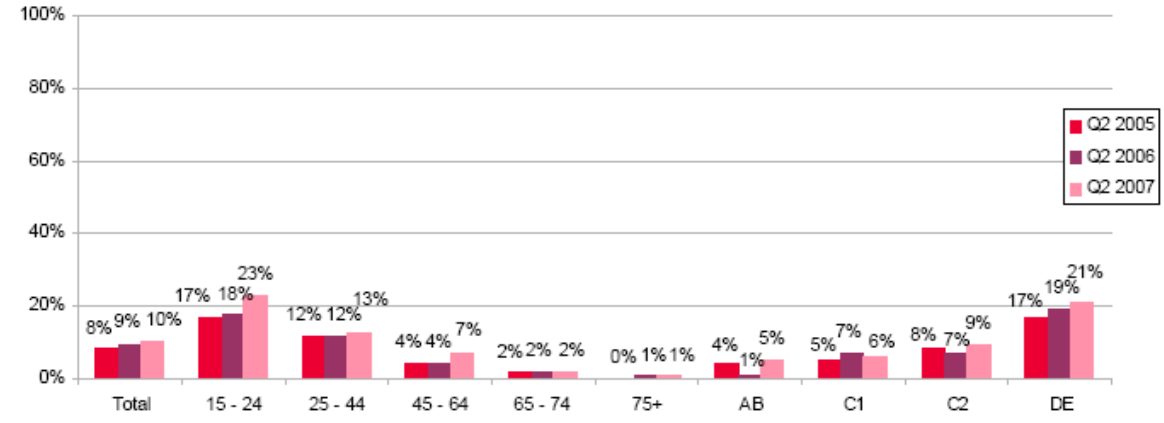
Figure 5.60 **Household telecoms connections, by socio-economic group**



Source: Ofcom research, Q1 2008
Base: All respondents

Ofcom published a similar report on the Consumer Experience on 20 November 2007 which showed that the proportion of DEs who rely solely on mobile for telecommunications has now reached 21% in Q2 2007 (Para. 2.2.7). These customers are likely to be using mobile telephones predominantly for voice and text at a basic level.

Figure 18: Age and socio-economic profile of users of mobile-only services



Base: All adults (Q2 2005, 2206) (Q2 2006, 2439) (Q2 2007, 2265)
Source: Ofcom communications tracking survey

ComReg's market research[4] states that 'Those using pre-pay are more likely to be female (79%), aged 18-24 (88%), C2DE (84%), students (93%) and not have a fixed line at home (82%).' Conversely 'Those opting for a monthly bill are more likely to be male (30%), aged 35-49 (32%) and ABC1 (36%).'

Tesco Mobile's own segmentation in the UK is shown in the chart below. The graph shows Tesco Mobile segmentation compared to that for Tesco as a whole in the UK. [✂]

[✂]

[4] ComReg Consumer ICT Survey June 2008

If we consider the analogy of traditional post, we can see that both the sender and the receiver of a letter or a parcel receive benefit. In the current charging model, only the sender pays for the post. If there was a charge to receive post, one can quickly imagine that many letterboxes would be nailed shut.

Similarly, if customers had to pay to receive calls many would either refuse to take calls or would quickly change their telephone number to stop incoming calls. The proportion of incoming calls would decline which would inevitably mean that the number of outgoing calls would decline too. One only has to look at many American business cards to see that mobile numbers are much less frequently displayed than is the case in the European context.

At the low end usage customers receive more calls than they make. As is evidenced in the next section, Tesco Mobile in both the UK and Ireland has overall call volumes which are nearly balanced between outgoing and incoming calls. Many prepaid customers are enabled to have a mobile phone because other people pay to make calls to them. For some consumers, the mobile phone is the only way in which they can be contacted. [✂]

Balance of call volumes

It has been argued that the new entrants will face a net outflow of calls from their network. The Commission puts it this way at Para 2.2 of their explanatory note.

> Late entrants argue that due to large traffic imbalances and on-net/off-net price differentiation they cannot compete effectively at the retail level. A large proportion of calls originated on late entrant networks is terminated on other networks, i.e. offnet. If new entrants pay a regulated termination charge in excess of actual costs they effectively give a transfer to the large network. As a result, their ability to offer retail rates comparable to the retail rates of an established operator, which terminates a majority of its calls on-net, is impeded.

Tesco Mobile, a 'late entrant' itself, disagrees with this general principle. Tesco Mobile's practical experience is that call flows even for small new entrants are balanced. In Ireland, with around [✂] customers, the ratio of outgoing calls to incoming is 53:47. In the UK, with [✂] million customers, the ratio is 51:49. The call balance is essentially the same in the two countries despite the factor of [✂] difference in customer base.

From a theoretical point of view, one can also show that the net flow of traffic is not determined by the size of a network but rather by the calling behaviour of the customers on the network. An algebraic analysis is provided at Appendix 3.

The key issue for a new entrant is the net flow of traffic in and out of the network, not the proportion of off-net calls. For a network which has customers who make and receive similar numbers of calls, the flow of traffic will be similarly balanced. Where a network contains customers who predominantly make calls then there will be a net outflow.

In the situation where there is a large network and a small network, the customers of the small network will make a higher percentage of offnet calls. But where the calling behaviour is balanced between outgoing and incoming calls, the smaller number of customers who make a higher

percentage of offnet calls will be offset by the larger number of customers making a lower percentage of offnet calls. The net flow of traffic between the smaller network and the larger network will be essentially zero.

Imbalances of traffic can exist between any two networks but this is driven by the nature of the outgoing retail prices. Where an operator offers very large volumes of calls for a fixed price there will be more calls generated than received by those customers. This will particularly be the case where the average price for the outgoing calls is substantially lower than the average price paid to make a call to those customers.

The Commission argues in its Explanatory Note at para 2.2

> If new entrants pay a regulated termination charge in excess of actual costs they effectively give a transfer to the large network. As a result, their ability to offer retail rates comparable to the retail rates of an established operator, which terminates a majority of its calls on-net, is impeded.

The Commission has not understood correctly the economics of mobile networks. If the flow of traffic is balanced between two operators then there is no net flow of money from one operator to the other. The actual termination rate cancels out of any calculation of the cost of providing calls in the round for a customer. A cost stack calculation of outgoing off net calls only might show a higher cost of offnet compared to on net calls but this neglects the benefit received from incoming calls.

Again the Commission's assertion is only true for those mobile operators who have chosen to target those customers who will predominantly make calls. The Commission needs to be careful that it does not argue from a very particular set of circumstances to the general position.

Tesco Mobile does not give a transfer to larger networks. The question is not about the net payment but rather about the price balance of calls incoming and outgoing which the Commission's proposals will seriously unbalance.

<u>Benefit from calls</u>

The Commission argues that both the fixed caller and the mobile receiver gain benefit from a fixed to mobile call. They use this argument to suggest that mobile customers receiving calls should pay some contribution to the call cost in the light of this benefit.

Another way of looking at this relationship is to say that the benefits of a call from a fixed line to a mobile are the same as for the call in the reverse direction i.e. from mobile to fixed. In this way of looking at the question we would expect calls to be roughly the same price in either direction.

Retail prices inc. VAT	Calls from mobile	Calls from fixed
Tesco Mobile UK	20p any time of day	12.5p daytime 7.5 p evening
Tesco Mobile Ireland	20 cents any time of day	29.23 cents daytime

		20.81 cents evening 16.88 cents weekend

In the UK it cheaper to call from fixed to mobile at all times of day than the other way round. In Ireland the price of calls from fixed to mobile is higher in the day, much the same in the evening, and cheaper at the weekends.

Reducing mobile interconnect rates will have the effect of increasing mobile outgoing prices and reducing the price of fixed to mobile calls. In the UK this will make the price of a mobile to fixed call much more expensive than in the other direction. This may well lead to people asking to be called back by the other person. As this happens, a vicious circle will commence whereby the volumes of fixed to mobile calls will increase and mobile to fixed calls further decrease. [✂]

Imbalance of outgoing and incoming call prices

Callback services operate when there is an imbalance between the outgoing and incoming call prices. An example of callback is provided at Appendix 2. The Commission's proposals will make outgoing calls from a mobile significantly more expensive than calls from a fixed line to a mobile. This will encourage automated callback services in addition to the informal callback explored in the previous section.

Callback services such as the example provided are available today but as can be seen the price for making such a call from a mobile is higher than from a fixed phone because of the international call required to call back the mobile phone. If mobile termination were to become much cheaper the cost of international calls to mobile phones in Europe would fall towards the fixed prices. This makes the callback service much more attractive.

Such lower priced calls would in themselves be good news for customers. Callback would become commercially viable within country. Mobile phone customers would be able to get cheap prices via callback. Unfortunately no one would be paying for the radio network which is unsustainable. It would be likely that some form of charge for receiving incoming calls would need to be instituted. [✂]

Cost based mobile termination

Tesco Mobile accepts that mobile termination rates should be cost based but it does not agree that the rates should be set at levels below a fair cost recovery. The Commission has not made a satisfactory case for all common costs to be recovered only from retail activities of mobile operators. It is not clear why wholesale costs should not make their own contribution to the efficiently incurred costs of the mobile networks.

At Recital 7 of the draft recommendation, the Commission states that cross-subsidisation between operators is a problem. Where the costs of termination rates are set on a long run incremental cost basis it is not apparent why there is a problem of cross-subsidisation.

Moving the prices of mobile termination to a substantially lower basis by the removing of common costs will cause a cross-subsidisation problem. The Commission's proposals are in danger of causing the very problem that they seek to avert.

Conclusion

At Recital 8 of the draft recommendation, the Commission highlights Article 8(2) of the Framework Directive where NRAs are 'required to promote competition by, amongst other things, ensuring that *all users derive maximum benefit in terms of choice, price and quality of service* and that there is *no distortion or restriction of competition*.' (Highlights inserted) The current proposals will have the effect of depriving some customers [✂] from the benefits of mobile telephony. The proposals will also both distort and restrict competition by favouring certain types of network operators over others.

The Commission's proposal acts against the principles in the Framework Directive which it seeks to follow.

The recommendations will have a serious impact on the market for mobile services with a high likelihood of adversely affecting those consumers least able to afford such changes. The Commission needs to conduct a thorough impact assessment to ensure that European citizens are not disadvantaged, and that particularly the less well off derive maximum benefit from the proposals.

A better understanding of mobile economics is also required. Tesco Mobile as a late entrant does not agree with the points of view ascribed to late entrants in general. The Commission needs to ensure that it does not favour one type of mobile operator against others. Distortion of competition in this manner is not acceptable.

Appendix 1 - US operator plans

AT&T

Minimum charge of $1.00 per day or price increases from 10¢ to 25¢ per minute

1. Choose a Plan

A. If you plan on using your phone more than 6 minutes on the days you use your phone,
Pay As You Go Unlimited Talk

Select	Rate	Daily Access Fee*	Mobile to Mobile Minutes
◉	.10 **$ per minute**	$1.00 per day, ONLY on days you use your phone	Unlimited

B. If you plan on using your phone 6 minutes a day or less,
Pay As You Go $.25/minute

Select	Rate	Daily Access Fee*	Mobile to Mobile Minutes
○	.25 **$ per minute**	N/A	$.25 per minute

Amounts deposited into your account expire as follows: cards less than $25, 30 days; cards $25 to $75, 90 days; $100 cards, 365 days. Unused account balance is forfeited upon expiration.

http://www.wireless.att.com/cell-phone-service/go-phones/pyg-plans-phones.jsp?wtSlotClick=1-0010X7-0-1&WT.svl=calltoaction&_requestid=2831

T-Mobile USA

T-Mobile Prepaid*	Pay By The Day	Pay As You Go	Sidekick® Prepaid**
Unlimited Nationwide Calling	Unlimited Nights 7 p.m to 7 a.m. Unlimited Nationwide Calling to any T-Mobile number	No	No
Cost Per Minute	10¢ per minute all other domestic calls	$100 for 1000 minutes $50 for 400 minutes $25 for 130 minutes $10 for 30 minutes	15¢ per minute all other domestic calls
Daily Access Charge	$1.00 only on the days you use your phone	No	$1.00 per day for unlimited nationwide e-mail, web browsing, text messaging and instant messaging
Gold Rewards+	No	Yes	No

Pay As You Go

With Pay As You Go, you get wireless service exactly how you like it. There's no long-term contract, no credit checks, and no surprises. In fact, you can even become a Gold Rewards member and get 15% more minutes on your refills. Check it out!
Add $100 in refills with Pay As You Go to become a Gold Rewards customer. As a Gold Rewards member, you get 15% more minutes on all refills and your minutes won't expire for a year after the time you refill. A $100 refill value already includes the 15% more minutes bonus.

Check out the chart below to find the perfect refill option for you. Or, if you're already a prepaid customer, you can start now by adding minutes from your mobile phone, on My T-Mobile, or by purchasing and redeeming a refill card at any one of our 90,000 locations nationwide.

Refill value	Whenever Minutes®	Expiration (days)	Gold Rewards Whenever Minutes®	Expiration
$10	30	90	35	
$25	130	90	150	1 year
$50	400	90	460	
$100	Instant Gold! 365 days before expiration		1,000	

This table does not represent prepaid international rates. See prepaid international rates

http://www.t-mobile.com/shop/plans/Default.aspx?plancategory=4

Verizon Wireless

INpulse® Pay As You Go

- **Pay only on the days you use it.**
  Didn't use it on Monday, then don't pay anything on Monday.
- **Unlimited IN Calling with over 65 million Verizon Wireless customers.**
- **No credit checks, long-term contracts or deposits.**
- **Great features like VZ Navigator and V CAST Music.**

INpulse Coverage Maps:
National map
Regional map

Included Features:
Get the Details

Select a Plan:	Core	Great Value! Plus	Power
Daily Access (only on days used)	£0.99	£1.99	£2.99
Unlimited IN Calling (mobile to mobile)	Unlimited	Unlimited	Unlimited
Night Minutes (9:01 pm - 5:59 am)	10¢	Unlimited	Unlimited
Weekend Minutes (Sat - Sun 12:00am - 11:59pm)	10¢	5¢	Unlimited
Per Minute & Text Messaging Rate*	10¢	5¢	2¢

* For all other calls (6:00am - 9:00pm) or per message sent and received

View International Calling and Text Messaging Rates and Locations

Refill Expiration (once applied to the account)

- $15-$29.99 expires in 30 days
- $30-$74.99 expires in 60 days
- $75-$99.99 expires in 90 days
- $100 or more expires in ONE YEAR!

http://www.verizonwireless.com/b2c/store/controller?item=prepayItem&action=viewPrepayOverview

Appendix 2 – Callback example

unitedworld telecom
Where savings meet quality...

customer login | agent login | trigger a call

Save up to 80% on international calls!
From anywhere in the world

Over 10 Years In Business

Home | Products & Services | View Rates | Contact Us | Sign Up | Support | Partner Programs | Corporate

Toll Free (USA) 1-866-234-2880 or +1-561-276-7156 (USA & International)

english | français

International Callback

Easy access to lowest international rates from any country in the world!

Products & Services

- International Callback
- Virtual Calling Card
- Global Call Connect
- CallMe800
- CallMyGlobal Number
- Global VoIP Connect

View Rates

Sign Up Today

Click for LIVE support

If you want to call international at extremely low rates from any country in the world, then our International Callback service is the perfect option for you!

FAQ

1. Will the local telecommunication provider charge me when using the Callback service?
2. How do I place a call using the Callback service?
3. Are there any minimum usage requirements?
4. What are the worldwide rates for this service?
5. How long does it take to open my new account?
6. Can I use this service from any phone? Are the rates the same?

For more questions please feel free to contact us by phone or e-mail. You will find our contact info through the following link: Contact Us

How International Callback works

Upon sign up for the Call back service, customer receives a unique and exclusive US phone number, also referred to as access number. To place an international phone call, the customer first dials the US access number and hangs up at first ring. In a few seconds, our switching center calls the customer's phone number back and gives a message prompting the customer to dial the destination number. You can also use a callback card to help you remember your access number. It's that simple!

Features and Benefits

- Travelers can use this Callback service from their hotel room! Travelers are able to record a greeting that will allow the operator to transfer the call to the appropriate room or office.
- Change your callback number at any time, either on the Internet or using our Interactive Voice Response system. Changes are effective immediately.
- Use it from any phone! The callback service can be used from a fixed phone or a mobile phone to save when placing international long distance calls
- Speed dials can be used for a faster connection to the most frequently dialed numbers.
- Make various calls once the callback is received without having to dial the callback number again.
- Benefit from low international calling rates while enjoying high quality connections!
- There are no monthly fees, connection fees, or charges for incomplete or busy calls!
- We offer easy payment options; we can debit your monthly usage from your preferred credit card, or you can pre-pay your account every month, it's your choice!
- You receive a monthly statement statement by e-mail with call details at no additional charge!
- We offer excellent customer service! As a United World Telecom customer, you will receive individual attention from our trained and qualified staff.
- You will have access to an account management online feature for easy handling of many convenient features!
- Signing up for the service is easy and there is no contract and no commitment!
- Never worry about a missed call. If you miss your callback, you will not be charged. Simply call the access number again at no charge.

Availability

The *International Callback* service is available from any country in the world! You will not find a better quality callback service.

http://www.uwtcallback.com/international_call_back.html

Calling from UNITED KINGDOM

A B C D E F G H I J K L M N O P Q R S T U V W Y Z (All countries)

Destination Country	Calling From: UNITED KINGDOM	Calling From: UNITED KINGDOM Mobile
	Rate/Min	Rate/Min
A		
AFGHANISTAN	$0.450	$0.710
AFGHANISTAN Mobile	$0.450	$0.710
ALBANIA	$0.199	$0.459
ALBANIA Mobile	$0.379	$0.639
ALGERIA	$0.277	$0.537
ALGERIA Mobile	$0.285	$0.545
AMERICAN SAMOA	$0.171	$0.431
AMERICAN SAMOA Mobile	$0.171	$0.431
ANDORRA	$0.092	$0.352
ANDORRA Mobile	$0.399	$0.659
ANGOLA	$0.259	$0.519
ANGOLA Mobile	$0.350	$0.610
ANGOLA Mobile	$0.350	$0.610
ANGOLA Mobile Unitel	$0.350	$0.610
ANGUILLA	$0.240	$0.500
ANGUILLA Mobile	$0.370	$0.630
ANTIGUA	$0.235	$0.495
ANTIGUA Mobile	$0.265	$0.525
ARGENTINA	$0.113	$0.373
ARGENTINA Buenos Aires	$0.113	$0.373
ARGENTINA Mobile	$0.320	$0.580
ARMENIA	$0.160	$0.420
ARMENIA Mobile	$0.310	$0.570
ARMENIA Yerevan	$0.185	$0.445
ARUBA	$0.180	$0.440
ARUBA Mobile	$0.300	$0.560
ASCENSION ISLAND	$0.815	$1.075
AUSTRALIA	$0.080	$0.340
AUSTRALIA Mobile	$0.280	$0.540
AUSTRIA	$0.085	$0.345
AUSTRIA Mobile	$0.350	$0.610
AZERBAIJAN	$0.250	$0.510
AZERBAIJAN Mobile	$0.335	$0.595

http://www.uwtservices.com/rates/callbackrates.asp?Agt=A985123&CCode=000044|3720|UNITED+KINGDOM&B1=View+Rates

Appendix 3

Consideration of cross net traffic flows

Minutes of traffic

Consider two operators, A and b, where A has N customers and b has n customers. We can assume that operator A is much bigger than operator b i.e. N > n.

Each customer at A will on average generate M_T of minutes in total which will be made up of on-net minutes M_o and cross-net minutes M_x.

$$M_T = M_o + M_x$$

Similarly each customer of operator b will on average generate m_T of minutes with on-net minutes m_o and cross-net minutes m_x. Again

$$m_T = m_o + m_x$$

Customers will call people on the other network in proportion to the customers on the other network as a proportion of the total number of customers.

$$M_x = M_T . \frac{n}{n+N}$$

$$m_x = m_T . \frac{N}{n+N}$$

If the networks are of equal size then 50% of all calls will be cross-net calls. This is what we would expect.

We can also see that where operator b is smaller than operator A, the proportion of cross-net traffic generated by b's customers will be bigger than for operator A. Operator A's customers will make more on-net calls than off-net and vice versa for operator b's customers.

The total traffic in minutes, T, from operator A to operator B will be the product of the number of customers and the cross-net traffic per customer.

$$T = N . M_x$$

$$T = N . M_T . \frac{n}{n+N}$$

The traffic t in the reverse direction from b to A will be

$$t = n . m_x$$

$$t = n . m_T . \frac{N}{n+N}$$

The net flow of traffic T_{net} from A to b will be the difference between the two amounts of traffic in either direction.

$$T_{net} = T - t$$

$$T_{net} = N.M_T.\frac{n}{n+N} - n.m_T.\frac{N}{n+N}$$

$$T_{net} = \frac{1}{(n+N)}(N.M_T.n - n.m_T.N)$$

$$T_{net} = \frac{N.n}{(n+N)}(M_T - m_T)$$

Where the traffic generated by customers is the same i.e. $M_T = m_T$, then the net flow of traffic is zero regardless of the relative size of the two operators.

If operator A has customers which on average generate more traffic than operator b's customers, i.e. $M_T > m_T$, there will be a net flow of traffic from A to b. Conversely if operator b's customers generate more traffic than operator A's i.e. $M_T < m_T$, there will be a net flow in the opposite direction.

The direction of flow of net traffic is solely dependent on the minutes generated by each operator's customers, not the size of the customer base.

In words, the rationale for this conclusion is that although the smaller operator will generate more cross-net traffic as a proportion of all generated traffic they also have fewer customers. The total amount of cross-net traffic generated is dependent on the cross-product of the number of customers in both networks which is the same in either direction.

Net payments

We can expand out the analysis to include the moneys which will flow between the operators. Let Operator A have a termination rate R and operator b have a termination r.

The net payment P_{net} between the operators will be the difference between the payments in either direction.

$$P_{net} = r.T - R.t$$

$$P_{net} = r.N.M_T.\frac{n}{n+N} - R.n.m_T.\frac{N}{n+N}$$

$$P_{net} = \frac{N.n}{(n+N)}(r.M_T - R.m_T)$$

Where the operators have the same termination rate i.e. R = r, then we have

$$P_{net} = \frac{N.n.r}{(n+N)}(M_T - m_T)$$

The direction of the net payment is again solely defined by the traffic generating customers. If the average traffic is the same for both operators, i.e. $M_T = m_T$, then the net payment is zero.

Where the termination rates are different, i.e. $R \neq r$ but the traffic per customer was the same i.e. $M_T = m_T$, there is a net payment from the operator with the higher termination rate to the operator with the lower rate governed by the formula

$$P_{net} = \frac{N.n.M_T}{(n+N)}(r - R)$$

With different termination rates and different minutes generated, there could still be a zero net payment where $r.M_T = R.m_T$. The flow of the traffic and flow of money can be in different directions depending on the relative differences between the minutes generated per customer and the difference in the termination rates.

In all of these considerations, the relative size of the networks has not been a factor in determining the direction of the traffic or the payments.

Customer types

It is generally acknowledged that customers with large bundles of minutes make a higher number of calls than they receive. Many prepaid customers are the opposite where they receive more calls than they make. There is a continuum of customer types between the two ends of the spectrum.

The mix of customers will depend on the type of customers which an operator has attracted through its retail marketing offer. Some operators will attract predominantly postpay customers whilst others will attract prepay customers.

These retail considerations will affect the relative flow of traffic and interconnect payments between mobile operators.