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April 21, 2004

Patrick K. Williams  
Office of Utilities Regulation  
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Kingston 10  
Jamaica

**Re: Office of Utilities Regulation, Assessment of Dominance in  
Mobile Call Termination, Supplementary Consultative Document,  
Document No: TEL 2004/03, March 30, 2004.**

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Dear Mr. Williams:

AT&T Corp. ("AT&T") is pleased to respond to the invitation of the Office of Utilities Regulation ("OUR") to provide comments on the above-captioned Consultative Document, which "sets out the Office's views regarding its assessment of dominance in the markets for Mobile call termination." (Consultative Document, ¶ 1.11.) AT&T provides a large volume of telecommunications services to Jamaica and has an interest in this proceeding because excessive mobile network termination charges in Jamaica have a very negative impact on AT&T's customers who make calls to Jamaica.<sup>1</sup>

Notwithstanding AT&T's strong preference for deregulatory market-based remedies, direct regulatory intervention is necessary to prevent mobile network operators from abusing their market power by charging unreasonably high termination rates. As described below, AT&T supports OUR's conclusion that all mobile network operators possess market

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<sup>1</sup> 55 percent of the Jamaican household respondents to the survey cited by the Consultative Document have only mobile telephone service in their homes. Consultative Document, Figure 4 & ¶ A2.16.

power over call termination on their networks and that all mobile network operators therefore should be “regulated to reflect cost-based pricing consistent with the requirements of [Jamaica’s Fair Competition] Act.” (*Id.*, ¶¶ 3.17, 3.19.) AT&T also notes that Jamaica is required by its commitments under the WTO General Agreement on Trade in Services to ensure that its “major supplier” (dominant) telecommunications carriers provide interconnection at cost-oriented rates.

Because long run incremental cost (“LRIC”) best replicates prices that would be charged by carriers subject to competitive market pressures, LRIC-based rates should be the basis of regulatory intervention to ensure cost-based pricing by dominant carriers. AT&T, therefore, is concerned that OUR makes no reference to LRIC in its discussion of mobile termination costs and cites no evidence in the Consultative Document indicating that the maximum fixed-to-mobile (“FTM”) termination rates of J\$6.929 (approximately US \$0.115) described in Appendix 1 of the Consultative Document provide the cost-oriented rates required by the Fair Competition Act and Jamaica’s WTO commitments.

AT&T is similarly concerned that the “minimum settlement rate for international calls to mobile network[s]” of US \$0.169 proposed by OUR’s Decision on Settlement Rates, issued on January 23, 2004 also fails to reflect cost-oriented levels and far exceeds current market-based rates for this traffic. AT&T’s own recent cost ceiling study, which is attached to these comments and is largely based on publicly-tariffed carrier charges for the network elements and services required to terminate international calls, shows that cost-oriented rates for incoming international calls terminating on mobile networks in Jamaica, including international transport and gateway switching, are no higher than US \$0.0465. It is particularly disturbing that Jamaican carriers are now using the new OUR international termination rates for fixed and mobile networks as “floors” and are demanding international termination rates that *exceed* these unreasonably high OUR minimum rates.

Thus, while AT&T applauds OUR’s leadership and analysis in finding that mobile network operators possess market power and should be required to provide cost-based termination rates, AT&T hopes that OUR will not use the rates discussed in the Appendix to the Consultative Document as the basis for such regulation and will instead use a LRIC-based approach. The requirement for cost-based termination rates should apply to all traffic terminated on mobile networks, including international calls. In particular, AT&T again urges OUR not to proceed with the proposed minimum charge for international calls terminating on mobile

networks in Jamaica, which would raise these rates far above existing market-based levels, and is *almost three times* higher than conservative estimates of cost-oriented levels.

**1. High Mobile Termination Rates Are A Major Concern.**

Excessive mobile termination charges foster inefficient investment and operations, and unfairly distribute benefits and costs by harming consumers making calls to mobile users, particularly from fixed networks, and by allowing mobile network operators either to cross-subsidize the costs of their more competitive services or to retain unjust profits. OUR notes in the Consultative Document (¶ 2.1.) that above-cost mobile termination rates are a major concern in a number of countries, as underscored by the Office of the United States Trade Representative (“USTR”) in its 2003 Section 1377 review of telecommunications trade agreements.

The USTR again highlighted this concern in its recent 2004 Section 1377 review, in which it cited “some progress” in reducing mobile termination rates toward more competitive levels, but also stated that “mounting evidence suggests that operators in many countries are attempting to raise rates without justification.” (*Results of 2004 Section 1377 Review of Telecommunications Trade Agreements*, Apr. 7, 2004, at 2, available at: <http://www.ustr.gov/sectors/industry/Telecom1377/2004/1377report.pdf>.) The USTR also noted in the 2004 Section 1377 review that “[t]he [United States] Administration, through the National Telecommunications and Information Administration, while not advocating regulation specifically for mobile services, has advocated that a principle of cost-orientation be applied to international mobile termination rates,” and that the U.S. Federal Communications Commission recently announced that it will issue a Notice of Inquiry on high mobile termination rates. (*Id.*, at 5.)

**2. OUR Properly Analyzed the Relevant Market and the Need for Requirements that Mobile Network Operators Provide Cost-based Rates.**

AT&T advocates the use of deregulatory market-based solutions whenever possible. In most circumstances, because competitive forces can overcome many market failures and can respond dynamically to consumer needs, a light-handed approach to regulation will achieve better results for the public than would regulatory intervention. However, in those circumstances where market failures make it impossible for competitive forces to discipline rates effectively, it is necessary to intervene with direct regulation. Unconstrained mobile call

termination rates sit squarely within this latter category, and require OUR to take action to protect the public interest through regulation.

Upon analyzing the potential supply-side and demand-side competitive restraints on mobile termination charges, OUR concludes that there is a separate market for termination on each mobile network. In effect, OUR finds that each mobile operator is a monopolist in the supply of termination to its own network, and AT&T agrees with these findings. As OUR concludes, under the Calling Party Pays (“CPP”) system market forces do not constrain high mobile termination fees, because the person who initiates the call to the mobile phone pays the mobile operator for the mobile termination, while the called party, who is a customer of the mobile operator, is not charged for the termination. (¶ 2.20.) Because the consumer who subscribes to the CPP mobile operator is not the same consumer who pays the CPP mobile operator for call termination, there is no market constraint on CPP mobile operators to reduce high call termination fees.

There is no effective demand-side substitute for the calling party or the called party, because the potential substitutes (*e.g.*, placing calls to fixed rather than mobile lines, and sending short text messages rather than voice calls, or utilizing call-back) are clearly imperfect and also would undermine the quality and convenience factors that create demand in the broader mobile market. (*See id.*, ¶¶ 2.26-2.29.) There also is no effective supply-side substitute, which would require a competing operator to have access to the details of the end user’s SIM card, and the mobile operator can simply refuse to share this information with other operators. (*Id.*, ¶ 2.25.)

Market forces clearly are not operating here. Because calling parties cannot take their business elsewhere if they need to reach a customer on the particular mobile network, because mobile users are unlikely to make network provider decisions on the basis of termination charges that they never see nor pay, and because fixed network operators cannot protect themselves or their customers from high mobile termination rates by refusing to interconnect, the mobile operator can collect excessive charges with impunity.

OUR accordingly finds that “mobile voice call termination to each mobile operator’s subscribers constitutes a separate market.” (*Id.*, ¶ 2.38.) OUR goes on to conclude that all mobile network operators are dominant in these markets because they each “have 100% of their respective call termination markets” and these monopolies are protected by substantial



technical entry barriers. (*Id.*, ¶¶ 3.3-3.6.) OUR finds that the proven ability of mobile operators in Jamaica to raise and maintain termination rates above those charged by other mobile operators further demonstrates their market power and refutes claims that there is a single mobile termination market in Jamaica. (*Id.*, ¶¶ 3.7-3.15.) OUR properly concludes, therefore, that each mobile operator is dominant under the criteria set forth under the Fair Competition Act of Jamaica and should be required to provide cost-based rates.

Other national regulators have made similar findings. The OUR Consultative Document appropriately highlights the regulatory actions undertaken by OFTEL, the former UK telecommunications regulator, in finding that each mobile network operator exercises market power over call termination on their networks and should therefore be subject to termination rate regulation. (¶¶ 2.5-2.9.) OFTEL made this determination following a European Commission recommendation designating the market for voice call termination on individual mobile networks as one where European Union Member State remedies are presumptively necessary. (*See Commission Recommendation 2003/31/EC on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation*, OJ L 114, 8.05.2003, p.45, market 16 of the Annex.)<sup>2</sup>

A recent Ovum study similarly finds that “[t]here are no effective market mechanisms to curb the price of the mobile termination service” and that “[t]here is considerable evidence that mobile termination rates (MTRs) are well above costs in most countries. We estimate that profit margins of over 100% are commonplace for most mobile network operators (MNOs).” (David Rogerson, *Mobile Termination Rates*, Ovum, Jan. 2004, at 1.) Ovum states that “[i]n markets where the calling party pays for making calls to a mobile phone, mobile termination rates take on the characteristics of a ‘bottleneck’ service.” (*Id.* at 4.) “By this we mean a service for which the normal disciplines of the competitive market are narrowed to such an extent that they no longer constrain the behaviour of the service provider.” (*Id.*) The result is unreasonably high mobile termination rates, which requires mobile rates to be “regulated and brought towards cost levels in order to correct these competitive distortions and network inefficiencies.” (*Id.* at 1.)

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<sup>2</sup> Regulators or competition authorities in Belgium, Finland, France, Greece, Hungary, the Netherlands and Sweden have also found that mobile operators have market power.

Jamaica's WTO commitments in telecommunications services under the General Agreement in Trade in Services also require the provision of cost-oriented rates for call termination on the networks of C&W and other mobile carriers in Jamaica. Jamaica made "additional commitments" under the WTO Reference Paper to ensure that "[i]nterconnection with a major supplier" is provided at "cost-oriented rates." (World Trade Organization, Fourth Protocol to the General Agreement on Trade in Services, Apr. 15, 1997, Jamaica, Schedule of Specific Commitments, at 9.) For the same reasons that OUR finds that mobile operators in Jamaica are dominant under Jamaican law, those mobile operators are "major suppliers" as defined by Jamaica's Reference Paper commitments. They have "the ability to materially affect the terms of participation (having regard to price and supply) in the relevant market for basic telecommunications services as a result of: (a) control over essential facilities; or (b) use of [their] position in the market," as those commitments require. (*Id.* at 8.) Thus, Jamaica must ensure that interconnection with these major suppliers is provided at cost-oriented rates.

**3. OUR Should Establish LRIC-based Rates and Remove the Minimum Charge for International Calls.**

AT&T agrees that mobile network operators possess market power and should be required to provide cost-based termination rates, but does not share OUR's view that the estimates submitted by C&W provide an appropriate "proxy" for termination costs on mobile networks. (Consultative Document, ¶ 3.7.) OUR states that this information is used because "the only information that is available to the Office on the cost of mobile call termination is that supplied by C&WJ, the Office decided to use this as a proxy for the industry." (*Id.*, ¶ 3.7.) However, the Consultative Document provides no evidence indicating that these estimates, or that the "maximum mobile termination rate for domestic FTM calls" of J\$6.929 (approximately US\$0.115) that is based on these estimates, reflect cost-oriented levels.<sup>3</sup> (*Id.*, ¶ A1.5.) There is, therefore, no basis for using these estimates to ensure cost-based mobile termination charges.

AT&T also is concerned that the Consultative Document makes no reference to the use of long run incremental cost analysis, which best ensures cost-based pricing by dominant

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<sup>3</sup> OUR also provides no explanation for its use of a spectrum charge based on the capital cost of a US\$50 million investment. Consultative Document, ¶ A1.1. Because spectrum exists without any cost for its production, does not depreciate, and has an indefinite physical life, the only costs associated with spectrum are the relevant licensing costs as amortized over the licensing period, including any renewals. OUR provides no such supporting analysis here.

carriers, because it best replicates prices that would be charged by carriers subject to competitive market pressures. In a fully competitive and efficient market, carriers set rates based on the long run incremental cost of providing the service in question. Thus, where competitive market forces are absent, LRIC-based rates best replicate the price-disciplining effects of a competitive market, and best ensure an efficient utilization of the service in question.

The requirement for cost-based rates should apply to all traffic terminated on mobile networks, including international calls. AT&T remains greatly concerned that the “minimum settlement rate for international calls to mobile network[s]” of US \$0.169 proposed by OUR’s Decision on Settlement Rates, issued on January 23, 2004, fails to reflect cost-based levels and far exceeds current market-based rates for this traffic. This proposed termination rate increase is unsupported by any evidence that underlying costs have increased. AT&T’s own study of termination costs for U.S.-outbound international calls in 65 countries shows that per minute termination costs for international calls to called parties served by mobile networks in Jamaica are no greater than US\$0.0465 (approximately J\$2.79), including the costs of international transmission and gateway switching. OUR’s proposed minimum settlement rate would exceed this conservative cost ceiling by 263 percent.

AT&T is also very concerned that Jamaican carriers are now requesting even higher international termination rates than the rates proposed by OUR, and are thus seeking to use OUR’s minimum rates as “floors” in their negotiations. In fact, the U.S. Federal Communications Commission (“FCC”) has recently made clear that “establishing rate floors . . . that are above previously negotiated rates” is “a means to disrupt normal commercial negotiations in order to force U.S. carriers to accept above-cost settlement rate increases that would be passed on to U.S. customers, and may require Commission action to protect U.S. customers.” (*International Settlements Policy Reform*, IB Docket No. 02-324, Mar. 30, 2004, FCC 04-53, First Report and Order, ¶ 44.) The FCC also emphasized that its “long-standing goals regarding rates for termination of international communications [of cost-based rates] apply to foreign mobile termination rates.” (*Id.*, ¶ 91.)<sup>4</sup>

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<sup>4</sup> See also, *AT&T Corp., Petition for Waiver of the International Settlements Policy to Change the Accounting Rate Arrangement for Switched Voice Service with Japan*, 12 FCC Red. 18,287, ¶ 8 (1997) (“The Commission’s longstanding goal for international settlement rates is cost-based rates because these rates promote economic efficiency and are the rates that would exist in a competitive market situation.”)


AT&T's recent study, which is attached to these comments, is largely based on public carrier tariffs for the network components used to terminate international calls. Since many of these tariffed rates are not set in competitive markets, AT&T's study provides very conservative estimates of the costs of terminating international calls. For Jamaica, the study uses C&W half-channel private line prices as a surrogate for the cost of international transmission, C&W domestic private line tariffs as a surrogate for transportation from the international switch to the mobile network, and half the C&W mobile to mobile on-net tariffed rate as a surrogate for the cost of termination on the mobile network. International gateway switching costs are conservatively estimated at 0.50 cents per minute. A discount also is applied to adjust for avoided retail costs. The use of half of a mobile operator's mobile to mobile on-net rate as a surrogate for the cost of termination on a mobile network is supported by the recent Ovum study, which states that "[r]egulators can obtain a proxy for cost-based rates from prices of other services set in markets where competitive forces mean that prices are reasonably cost reflective" and that "50% of the price of a mobile on-net call" may be used to estimate the cost of mobile call termination. (David Rogerson, *Mobile Termination Rates*, Ovum, Jan. 2004, at 32.)

\* \* \* \* \*

In conclusion, AT&T believes that OUR properly finds that mobile network operators possess market power and should be required to provide cost-based termination rates. However, AT&T urges OUR not to use the rates discussed in the Appendix to the Consultative Document as the basis for such regulation, and instead to use an LRIC-based approach. In particular, AT&T urges OUR not to proceed with the proposed minimum charge for international calls terminating on mobile networks in Jamaica, which is, under conservative estimates, *almost three times greater* than cost-oriented levels.

AT&T would be pleased to answer any questions concerning these comments.

Respectfully submitted,



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Attachment.



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February 5, 2004

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW, Room TWB-204  
Washington, DC 20554

**Re: Ex Parte, International Settlements Policy Reform, International  
Settlement Rates, IB Docket Nos. 02-324 & 96-261**

Dear Ms. Dortch:

AT&T Corp. ("AT&T") submits a revised tariffed components price ("R-TCP") study of the network components used to terminate international calls in the same 65 countries that were used for the Commission's TCP study in the 1997 *Benchmarks Order*.<sup>1</sup>

The new study is largely based on foreign carrier tariffs for the network components used to terminate international calls. Therefore, like the 1997 TCP study, the revised TCP study provides a very conservative ceiling for international termination costs. It shows an average TCP rate for termination on fixed networks in the 65 countries of 4.03 cents per minute, with individual country rates ranging from 1.63 cents per minute for India to 8.40 cents per minute for Chile. If the 65 countries are grouped by the different development categories adopted by the *Benchmarks Order*, the new study shows average rates of approximately 3.75 cents for upper-income countries, approximately 4 cents for upper and lower middle income countries and approximately 4.75 cents for lower income and "teledensity less than one" countries.

The new study also provides TCP rates for termination on foreign mobile networks. The mobile TCP rates, like the rates for termination on fixed networks, are largely based on foreign carrier tariffs for the network components used to terminate these calls and therefore also provide a very conservative cost ceiling. The study shows an average TCP rate for termination on mobile networks in the 65 countries of 8.23 cents per minute, with individual country rates ranging from 2.36 cents per minute for India to 14.91 cents per minute for Indonesia. Using the *Benchmarks Order* development categories, the study shows

<sup>1</sup> *International Settlement Rates*, 12 FCC Rcd. 19806 (1997) ("*Benchmarks Order*")

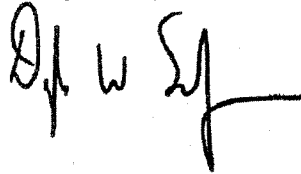
Ms. Marlene Dortch  
February 5, 2004  
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average TCP mobile termination rates of approximately 8 cents for upper-income countries, approximately 8.5 cents for upper and lower middle income countries and approximately 8.5 cents for lower income and "teledensity less than one" countries.

The tariff component prices for each country examined in the study are listed on the attached spreadsheets, with fixed and mobile rates listed separately. A detailed description of the methodology used for the study and details of the foreign carrier tariffs used for the international transmission and national extension components are also attached. The new study uses the same ITU-recognized international call termination network components as the 1997 study with adjustments to the foreign national extension component to model more closely the network configurations that are used to terminate calls. Other changes include the use of an international switching rate conservatively based on domestic tandem switching analogs and the removal of retail costs that are not relevant to international call termination. A further notable change is that the new study is based on 2003 data, while the 1997 study used data that is now almost ten years out of date.

AT&T would be pleased to answer any questions concerning these materials.

Respectfully submitted,



w/attachments  
copy to:  
D. Abelson  
J. Ball  
L. Choi  
A. Field  
G. Foster  
A. Gomez  
C. Grayer  
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M. Uretsky  
D. Webbink

## Revised Tariff Component Pricing (R-TCP) Benchmark Study

### Explanatory Notes for the Excel 65 country spreadsheet

The 1997 TCP and the 1997 Benchmark columns are taken directly from the FCC's 1997 Benchmarks Order.<sup>1</sup> The Benchmarks Order's TCP (tariffed components price) methodology developed prices for each of the three network elements used to provide international telephone service. The TCPs for individual network components and the structural framework used to calculate the 1997 benchmark TCP rates are described in the Benchmarks Order and in Appendix E to that order.

The additional columns in the Excel spreadsheet provide a Revised - Tariff Component Price ("R-TCP") for each of the 65 countries covered by the Benchmarks Order. Separate R-TCP rates for mobile terminated calls are also provided. The framework and methodology for the R-TCP study is explained in more detail in the following description.

### Overview of the R-TCP methodology

The 2003 R-TCP rates developed in this study use the same three ITU-recognized network components utilized in terminating an international call that were used by the Benchmarks Order's TCP methodology. Additionally, because most data sources rely on retail prices charged for the network components, an R-TCP minus avoided cost rate is developed to more closely reflect the cost ceiling of the network components used. The various data sources and assumptions used are discussed more fully below. Country specific information and assumptions are available in the attachments listing the details for the network components for each country. *After accounting for avoided costs, the R-TCP rates for the 65 countries average 4.18 cents per minute, with a range of 1.63 cents per minute for India to 8.87 cents per minute for Chile. The R-TCP rates for mobile terminated calls for the 65 countries average 8.23 cents per minute, with a range from 2.36 cents per minute for India to 14.91cents per minute for Indonesia.*

Currency exchanges are calculated using the Reuters rates posted in the *Wall Street Journal* on August 29, 2003. Where the exchange rate for a particular country is not listed in the *Wall Street Journal*, rates are used from [www.oanda.com](http://www.oanda.com) as of August 28, 2003.<sup>2</sup>

Unless noted otherwise,<sup>3</sup> this study uses the same assumptions as the 1997 TCP study used by the Benchmarks Order. For example, local taxes are not included in any

<sup>1</sup> *International Settlement Rates*, 12 FCC Rcd. 19806 (1997) ("Benchmarks Order").

<sup>2</sup> Foreign currency exchange rates used for the calculation of National Extension- Mobile rates are those effective August 28, 2003 from Reuters, unless otherwise noted.

<sup>3</sup> Some different assumptions used in the calculation of National Extension-Mobile rates are described below.

prices, circuit-loading information remains at 8,000 minutes per month per voice grade circuit, and 4:1 circuit multiplexing is used.

In line with overall improvements in technology, decreases in costs and the huge expansion in undersea submarine cable capacity in recent years, the additional cost of an international call is very small compared to the cost of a national call. The ITU Secretary General has noted that "[t]here is no longer a defensible logic to the argument that the price of making an international telephone call should be significantly higher than the price of a domestic telephone call."<sup>4</sup> The ITU Secretary General also stated in 1996 that "substantial cost reductions" had occurred in international transmission facilities and international switching facilities "to such an extent that they are no longer a major component in the cost of delivering international service."<sup>5</sup>

### International Transmission

As in the TCP methodology used by the Benchmarks Order, the R-TCP uses half channel international private line prices as a surrogate for the cost of international transmission by international terrestrial transmission, submarine cable or international satellite to international switching facilities in the foreign country. The rates for international transmission for the sixty-five countries in the R-TCP study range from 0.10 cents per minute for the U.K. to 7.73 cents per minute for Vietnam. *After deducting for estimated avoided costs, the rates for international transmission range from 0.08 cents per minute for the U.K. to 6.49 cents per minute for Vietnam with an average of 2.18 cents per minute.*

As noted above, international transmission costs have declined rapidly in the past five years. FCC Circuit Status reports list the capital cost and capacity of all submarine cables with landing points in the United States and show rapidly declining per circuit costs over the past several years. Similarly, *TeleGeography* estimated the cost of international circuit ownership for international transport in 2003 as being 0.02 cents per minute from Europe to the U.S. and at 0.3 cents per minute from India to the U.S.<sup>6</sup> Thus, *TeleGeography* noted that "thanks to plentiful new fiber-optic networks, international capacity costs – once a significant hurdle for carriers – now comprises less than one percent of international call costs."<sup>7</sup>

The current R-TCP rates use carrier tariffs for international dedicated circuits (private lines), including all generally available volume and term discounts, as published

<sup>4</sup> Yoshio Utsumi, Secretary General of the ITU, Telecommunications Policy, Volume 24, No. 1 (February 2000) available at [www.tpeditors.com/utsumi.htm](http://www.tpeditors.com/utsumi.htm). See also, "Accounting Rate Reform" September 29, 1998 statement by Henry Chasia, ITU Deputy Secretary-General, available at [www.itu.int/ITU-D/ict/papers/accrates/29SeptChasia.htm](http://www.itu.int/ITU-D/ict/papers/accrates/29SeptChasia.htm)

<sup>5</sup> ITU Secretary General's Paper on Accounting Rates, available at [http://www.itu.int/osg/spu/intset/ITUpap/sg\\_com3.html](http://www.itu.int/osg/spu/intset/ITUpap/sg_com3.html).

<sup>6</sup> *TeleGeography* 2003, "International Carrier Call Costs to the U.S."

<sup>7</sup> *TeleGeography* 2003, "Overview of International Call Price and Revenue Trends"



by Tarifica for the first quarter of 2003.<sup>8</sup> Rates for a 2.048 megabit per second (mbps) dedicated circuit are used for most countries. For countries with high traffic volumes that justify a higher bandwidth and consequently lower cost, higher bandwidth rates are used where available. As in the FCC's 1997 TCP study, per minute rates are calculated by using a multiplexing factor of 4:1 and a usage level of 8000 minutes per month per voice grade circuit. In countries where multiple carriers provide international dedicated circuits, the rates for the incumbent carrier are used, except where significantly lower rates are available from well-established competitors.<sup>9</sup> In cases where the new entrant carrier is not well established, the higher incumbent rates are used. Details of the tariffs used for these international private line rates are listed in a separate attachment.

Where international dedicated circuit rates are not available from the Tarifica database, such as for Austria, Bahamas, Barbados, and Switzerland, the relevant tariff data from the Lynx Global Telecom Database<sup>10</sup> is used. International dedicated circuit rates from Lynx are also used for Jamaica and Turkey. For Haiti, no data is available from either data source and the highest rate for a nearby country (Bermuda at 3.07 cents per minute) is therefore used as a surrogate.

International private line tariffs generally provide the international dedicated circuit to an international switching facility, with an additional charge to extend the circuit to a customer premise. Because only the rate for international transmission to the international switching facility is required for this analysis, the R-TCP calculations did not add this additional charge. However, where the price for the domestic extension is already bundled with the international tariffed price, no deduction is made to that bundled price. For countries with pricing structures that included a choice of multiple gateways, the highest rate to any gateway is used. As such, those rates certainly over-estimate the stand-alone, best available market price for international transmission.

The inflated nature of the foreign carrier international private line tariffs used for this study is further shown by fact that many carriers also provide international private lines at non-public "off-tariff" rates that are a fraction of the tariffed rates. The conservative nature of the Tarifica data used for this study is also shown by the more current and significantly lower international private line tariffs that are frequently reported by Lynx but not used here.

### **International Switching**

The R-TCP rate for international switching of 0.50 cents per minute provides a very conservative cost ceiling for this network component.

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<sup>8</sup> Tarifica is a London-based communications consultancy tracking telecommunications tariffs for more than 150 carriers worldwide. For additional information see [www.tarifica.com](http://www.tarifica.com).

<sup>9</sup> Countries where competitor rates are used are Australia (Optus) and the Philippines (Globe Telecom).

<sup>10</sup> Lynx Technologies is a global telecommunications professional services company providing a database of global telecommunications rates and tariffs for over 450 carriers in more than 200 countries. For additional information see [www.lynxtech.com](http://www.lynxtech.com).

International switching functions are very similar to the "tandem" switching functions of domestic toll switches and international switches consist of the same basic hardware used for domestic switching.<sup>11</sup> In fact, AT&T's nine international switching centers (and six Canadian gateways) use Lucent #4ESS hardware and are all "joint use" switches that perform both domestic and international switching functions. Similarly, most foreign carriers' international switches are joint-use facilities, providing toll switching for both international and domestic calls. As noted by the 1997 FCC study, "a correspondent's switch is often used for domestic service, both local and long distance calls, and for international service, both originating and terminating calls."<sup>12</sup>

The Commission has established a rate for incumbent LEC tandem switching, as a cost proxy for this network element, of "no greater than 0.15 cents (\$0.0015) per minute of use."<sup>13</sup> Because international tandem switches share the same basic hardware as domestic tandem switches, \$0.0015 is also an appropriate cost proxy for international tandem switching. Indeed, the CALLS plan for terminating interstate switched access adopted target rates of 0.55 cents for the BOCs and GTE and 0.65 cents for other price cap LECs for the use of three network components (tandem switching, interoffice transmission and local switching).<sup>14</sup> The Commission noted "evidence that the target rates are not below price cap LECs' incremental costs" and found they would "drive average traffic sensitive charges closer to the cost of providing these services."<sup>15</sup>

Another estimate of the cost of tandem switching is provided by comparing published rates for "single tandem" and "double tandem" switching. The Reference Interconnection Offer (RIO) of British Telecom (BT) shows differences between single and double tandem rates ranging from 0.38 to 0.14 cents per minute, depending on the time of day.<sup>16</sup> Because "double tandem" switching includes both an additional tandem switching function *and* inter-office trunking to connect the tandem switches, the difference between rates for single and double tandem switching undoubtedly overstates the cost of tandem switching alone.

ITU Recommendation D.300, cited by the 1997 FCC Benchmarks Order, used a rate of SDR 0.0129 (about 1.8 cents per minute) for international switches with a proportion of plant capacity composed of digital equipment from 61 percent to 100 percent. However, this recommendation is based on data from the early 1990's and no longer provides a reasonable cost estimate for this network component. The cost of gateway switching has dropped dramatically in the past ten years. As noted by the

<sup>11</sup> Benchmarks Order, Appendix E, at E-8.

<sup>12</sup> *Id.* at E-7.

<sup>13</sup> 47 CFR Section 51.513(c)(5).

<sup>14</sup> *Access Charge Reform*, 15 FCC Red. 12962, ¶ 142 (2000) ("CALLS Order")

<sup>15</sup> *Id.* at ¶ 170.

<sup>16</sup> See BT's RIO available at

[http://www.btwholesale.com/application?origin=resolve.jsp&event=bea.portal.framework.internal.refresh&pageid=typicalwidelite&nodeId=navigation/node/data/service\\_and\\_support/pricing/carrier\\_price\\_list\\_dir/carrier\\_price\\_list\\_browsable/cpl\\_browsable](http://www.btwholesale.com/application?origin=resolve.jsp&event=bea.portal.framework.internal.refresh&pageid=typicalwidelite&nodeId=navigation/node/data/service_and_support/pricing/carrier_price_list_dir/carrier_price_list_browsable/cpl_browsable), at Section B1, 1.01.

United States Trade Representative last year, “[i]nternational gateway switches have limited functions and handle enormous volumes of traffic, and therefore the cost attributed to them per minute of traffic should be minimal.”<sup>17</sup>

Indeed, the 1997 Benchmarks Order stated that “evidence in the market place indicates that the ITU data used to calculate the TCP for international gateway switching component is substantially above cost” and noted that it “erred on the side of allowing a higher price” by using this data.<sup>18</sup> The Benchmarks Order also cited interconnection rates in Sweden of only 0.30 cents per minute for network components including the international switch. As a further demonstration of the above cost nature of ITU D300 gateway switching data, the Benchmarks Order also noted that the FCC’s 1996 Local Interconnection Order found a range of between 0.20 and 0.40 cents per minute to provide a reasonable proxy for domestic switching costs.<sup>19</sup>

The out-dated nature of the ITU international switching estimates used by the Benchmarks Order is also shown by the rates charged by the U.K. carrier CNS for UK operators interconnecting at the CNS international switch for international outgoing calls. These published rates, covering CNS’ costs both for switching the calls and transporting them to the international mid-point, are as low as 0.85 cents per minute.<sup>20</sup>

#### **National Extension – Fixed**

The R-TCP National Extension - Fixed rates provide a cost ceiling for the various network elements used, after the international switch, to transport and terminate a call within a country’s borders. These rates are calculated by using foreign domestic private line tariff data (from Tarifica) to calculate a per minute rate and adding one-half of the foreign tariffed rate for a local phone call (also from Tarifica). This approach assumes that the call is transported from the foreign carrier’s international switch through its domestic national network over high-speed private lines to the local calling area and then terminated on the local network. This tracks the network configuration generally used to terminate calls over foreign domestic networks. In most cases, foreign carriers connect each tandem (or long distance) switch directly to every other tandem switch in their domestic networks and use this direct routing for most calls. Intermediate tandem switching is used only as a last resort in the case of blockage on the direct route.

Although foreign domestic networks carry both domestic and international calls and operate at speeds much greater than those tariffed for domestic private lines, the highest speed domestic private line rate (from Tarifica data for the first quarter of 2003) is used as a surrogate for the domestic transport cost. Many countries charge a single rate

<sup>17</sup> See *Mexico – Measures Affecting Telecommunications Services*, WT/DS204, First Written Submission of the United States of America, Oct. 3, 2002, para. 121, available at <http://www.ustr.gov/enforcement/2002-10-03-mextelecom-first.pdf>

<sup>18</sup> Benchmarks Order, ¶ 71.

<sup>19</sup> *Id.*, citing *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 11 FCC Rcd. 15499 (1996) (“Local Interconnection Order”).

<sup>20</sup> See <http://www.communicationsnetworkingservices.co.uk/wholesale.html>

for a domestic private line, independent of length. For countries with distance sensitive rate bands, the longest distance rate band is used and applied to all calls. Where rate bands are not available, estimates are made for the "average" distance of the domestic private line (as noted in the attachment describing the calculations). Any surcharges for longer distances than those covered by the highest rate band are generally quite low and would not appreciably change the overall per minute rate and therefore are not included. Details of the tariffs used for these domestic private line prices are listed in a separate attachment.

Because the Tarifica database does not include domestic private line tariffs for the Bahamas, Barbados, Bermuda, Jamaica, Switzerland, Turkey and Vietnam, data from the Lynx Global Telecom Database is used for those countries. The Kenya rate of 1.61 cents per minute is used for Haiti, for which neither Tarifica nor Lynx provide any tariff data on domestic private lines.

As recognized by the Benchmarks Order, "most international traffic is terminated in major metropolitan areas where network costs are generally lower due to economies of scope and scale that exist where traffic is concentrated in one geographic area."<sup>21</sup> Indeed, "[i]n many cases, more than 70% of calls from the United States terminate in major metropolitan areas."<sup>22</sup> Consequently, the use of the longest private line rate band for all traffic is a very conservative measurement of these domestic transport costs. As with international transmission, 8000 minutes per month per voice grade circuit are used to calculate the per-minute rate for domestic transport.

The price for a local call is also derived from Tarifica data for the first quarter of 2003. Data from the Lynx Global Telecom Database is used for the Bahamas, Barbados, and Bermuda, which do not have their local service rates included in the Tarifica database. Because local tariff data for Haiti is available from neither source, the highest rate in the Caribbean area of 5.06 cents per minute for Bermuda is used as a surrogate. Details of the tariffs used for these local call prices are listed in a separate attachment.

Where the local service carrier offers both residential and business local service rates, the generally higher business rate is used. All appropriate discounts, based on volume and/or term commitments, are included, and an average rate is used where rates vary based on time of day or day of the week. Where the local service carrier imposes a per call "call set-up" charge, a pro-rata adjustment is made to the per minute charge, based on the average length of a call from the United States, calculated from FCC 43.61 traffic data.

While the retail price of a local call covers the local network components used *both* to originate *and* to terminate the local call, the termination of an international call on a local network involves *only call termination*. Accordingly, one-half of the foreign tariffed rate for a local phone call is used as a surrogate for the local network cost to terminate an international call. In fact, because call termination does not require the

<sup>21</sup> *Id.*, ¶ 70.

<sup>22</sup> *Id.*

signaling and billing functions needed for call origination, the cost of call termination is less than the cost of call origination. The use of one-half of the tariffed local rate, therefore, provides a very conservative surrogate for the costs of the foreign local network components used to terminate an international call.

#### National Extension - Mobile

The R-TCP for mobile terminated calls uses the same methodology for the international transmission and gateway switching network components as used by the R-TCP for calls terminated on fixed networks. The R-TCP National Extension for mobile terminated calls also uses the same domestic private line rates used for the R-TCP National Extension - Fixed rates as a surrogate for the foreign domestic network costs for the transportation of calls from the international switch to the foreign mobile operator's switch. The same data sources, assumptions and per minute rates for domestic private lines are used as described for the R-TCP National Extension - Fixed rates.

For the network components used to terminate a call on a foreign mobile network, the R-TCP methodology uses one-half of the per-minute retail tariffed rate charged by the foreign mobile operator. As with the termination of international calls on foreign fixed local networks, the termination of an international call on a mobile network involves only call termination, while the retail tariffed rates charged by mobile operators cover the network components used both to originate and to terminate the mobile call. Accordingly, one-half of the foreign operator's tariffed rate is used as a surrogate for the foreign mobile network cost to terminate an international call. As with call termination on fixed networks, the cost of call termination on mobile networks involves less cost than call origination because it does not require the signaling and billing functions required for call origination, and use of one-half of the tariffed local rate provides a very conservative surrogate for the costs of the foreign local network components used to terminate an international call.

The foreign mobile tariffs are obtained from the Tarifica Mobile September 2003 report, except for Bahamas, Barbados, Bermuda, Ecuador, El Salvador, Jamaica, Nicaragua, Panama, and Trinidad, which are obtained from Lynx. Rates for Haiti, Honduras, Indonesia, and China are from research by Tarifica undertaken at AT&T's request. Details of the tariffs used for these mobile call prices are listed in a separate attachment.

The foreign mobile tariffed rates used for this study are generally available, postpaid rates for stand-alone mobile-to-mobile ("M2M") on-net subscriber-originated calls, and generally exclude special promotions, including special rates for calls to designated numbers. Where both residential and business rates are distinguished, the generally higher consumer rate is used. The rates used do not consider connection or subscription fees, unless tied to "free" minutes with no other per-minute rates, and do not rely on volume discounts or any type of usage discount, such as lower rates for incremental minutes after a certain volume. Thus, when no stand-alone mobile-to-mobile minutes are provided, the bundled minute rate or subscription fee is divided by the

number of minutes included in the plan. Where different rates apply for local and long distance calls or by distance-sensitive rate bands, an average rate is used. Similarly, an average rate is used where rates vary based on time of day or day of the week. The study excludes VAT and taxes and where call-set up fees contribute to the retail rate a pro-rata adjustment is made to the per minute charge, based on the average length of a call from the United States, calculated from FCC 43.61 traffic data. All rates used by the study are for outgoing calls.<sup>23</sup> In countries with more than one mobile operator, an average of the rates calculated as described above for each operator is used, except where one operator's rates are significantly higher and only the rates offered by the other operator or operators are used.<sup>24</sup>

### Avoided costs

Retail tariffs include cost components such as marketing, advertising, billing, and collection that are required for the provision of retail services but that are not used for international call termination. For this reason, retail tariffs greatly overstate the cost of the network components used for international call termination. As noted by the Benchmarks Order, "the tariff rates used to calculate TCPs include costs associated with providing retail communications service to consumers which would not be included in cost-based settlement rates. For example, tariff rates include an allowance for uncollectible billings, general overhead expenses associated with retail service, and marketing and commercial expenses that would not be included in the cost of providing international termination services."<sup>25</sup>

The R-TCP methodology adjusts for these retail costs that are avoided when international calls are terminated on foreign networks by applying a 16 percent discount to all foreign tariffs used in the study – for international private lines, domestic private lines, and fixed and mobile local service. This is consistent with the approach recently adopted by the New Zealand regulator, which found that an avoided cost discount "of 16% is appropriate, taking into account both the theoretical merit of the relative factor cost arguments, as well as the Commission's concerns regarding incentives to invest in infrastructure."<sup>26</sup> Indeed, the Singapore regulator has recently adopted much greater wholesale discounts by requiring SingTel to offer private lines to competitors at 30 to 50 percent below SingTel's retail prices.<sup>27</sup>

<sup>23</sup> Thus, the study did not use the incoming call rates currently offered in one RPP country (Mexico).

<sup>24</sup> The countries with more than one mobile operator where one operator's rates are not used for this reason are Australia, Colombia and Russia.

<sup>25</sup> Benchmarks Order, ¶ 70.

<sup>26</sup> New Zealand Commerce Commission "Determination on the TelstraClear Application for Determination for 'Wholesale' Designated Access Services", Decision 497, determined 12 May 2003.

<sup>27</sup> IDA Enhances Competition in Singapore's Local Leased Circuits (LLC) Markets, 16 December 2003, available at <http://www.ida.gov.sg/idaweb/marketing/infopage.jsp?infopagecategory=&infopageid=12629&versionid=2>. See also,



# 2004 FIXED R-TCP (US CENTS)

Country	1997 Fixed TCP	1997 Fixed BM	A Int'l Trans	B Gateway Switch	C DPL	D Local Retail Rate	A+B+C+D	(A+C+D) -16% + B
Argentina	32.10	19.00	1.88	0.50	2.29	0.30	4.97	4.25
Australia	18.70	15.00	2.67	0.50	1.39	1.15	5.71	4.88
Austria	31.40	15.00	3.12	0.50	0.12	1.47	5.21	4.46
Bahamas	19.90	15.00	1.01	0.50	0.15	2.53	4.19	3.60
Barbados	12.00	19.00	1.90	0.50	0.10	0.00	2.50	2.18
Belgium	14.10	15.00	1.37	0.50	0.04	2.12	4.03	3.47
Bermuda	9.90	15.00	3.07	0.50	1.21	2.53	7.31	6.22
Brazil	27.80	19.00	1.22	0.50	0.27	0.54	2.53	2.21
Chile	18.60	19.00	2.76	0.50	5.85	0.80	9.91	8.40
Colombia	18.50	19.00	1.75	0.50	0.35	1.57	4.17	3.58
Costa Rica	10.30	19.00	1.50	0.50	0.09	0.31	2.40	2.10
Czech Rep.	19.00	19.00	2.80	0.50	0.62	1.76	5.68	4.85
Denmark	14.40	15.00	1.08	0.50	0.08	1.39	3.05	2.64
Dominican Rep.	14.50	19.00	3.04	0.50	0.14	0.00	3.68	3.17
Ecuador	10.30	19.00	4.21	0.50	0.95	1.22	6.88	5.86
Egypt	17.20	23.00	1.25	0.50	0.01	0.14	1.90	1.67
El Salvador	11.80	19.00	3.20	0.50	0.36	0.89	4.95	4.24
France	17.50	15.00	1.03	0.50	0.07	0.83	2.43	2.12
Germany	19.80	15.00	1.51	0.50	0.03	1.08	3.12	2.70
Greece	23.00	19.00	2.75	0.50	0.24	1.42	4.91	4.20
Guatemala	10.30	19.00	2.23	0.50	0.30	1.17	4.20	3.61
Guyana	12.00	23.00	2.80	0.50	1.06	0.04	4.40	3.78
Haiti	30.40	23.00	3.07	0.50	1.61	2.53	7.71	6.56
Honduras	16.60	23.00	3.21	0.50	0.37	1.04	5.12	4.38
Hong Kong	7.00	15.00	4.51	0.50	0.11	0.00	5.12	4.38
Hungary	14.40	19.00	2.42	0.50	0.56	1.14	4.62	3.96



# 2004 FIXED R TCP (US CENTS)

Country	1997 Fixed TCP	1997 Fixed BM	A Int'l Trans	B Gateway Switch	C DPL	D Local Retail Rate	A+B+C+D	(A+C+D) -16% + B
India	31.20	23.00	0.49	0.50	0.42	0.44	1.85	1.63
Indonesia	35.50	19.00	6.77	0.50	0.04	0.41	7.72	6.56
Ireland	18.00	15.00	1.45	0.50	0.37	0.83	3.15	2.73
Israel	8.50	15.00	2.87	0.50	0.63	0.48	4.48	3.84
Italy	18.20	15.00	0.61	0.50	0.12	1.15	2.38	2.08
Jamaica	8.70	19.00	1.37	0.50	0.15	0.43	2.45	2.14
Japan	19.70	15.00	1.24	0.50	0.71	1.11	3.56	3.07
Jordan	23.00	19.00	3.21	0.50	1.04	0.61	5.36	4.58
Kenya	42.60	23.00	4.17	0.50	1.61	0.89	7.17	6.10
Korea	12.80	19.00	3.00	0.50	0.30	0.44	4.24	3.64
Kuwait	9.00	15.00	6.59	0.50	0.61	0.00	7.70	6.55
Malaysia	22.40	19.00	4.43	0.50	0.06	0.53	5.52	4.71
Mexico	16.80	19.00	0.55	0.50	0.20	0.96	2.21	1.94
Netherlands	9.80	15.00	0.98	0.50	0.02	1.14	2.64	2.30
New Zealand	23.80	15.00	4.84	0.50	1.22	0.80	7.36	6.26
Nicaragua	12.30	23.00	3.75	0.50	1.25	0.83	6.33	5.39
Norway	11.60	15.00	1.36	0.50	0.03	1.77	3.66	3.15
P.R. of China	17.70	23.00	1.26	0.50	0.15	2.42	4.33	3.71
Pakistan	26.70	23.00	4.99	0.50	2.05	0.35	7.89	6.71
Panama	19.40	19.00	2.49	0.50	0.60	1.00	4.59	3.94
Peru	16.10	19.00	1.07	0.50	2.85	1.89	6.31	5.38
Philippines	23.90	19.00	4.73	0.50	0.86	0.00	6.09	5.20
Poland	24.60	19.00	3.05	0.50	0.53	0.66	4.74	4.06
Portugal	23.90	15.00	2.04	0.50	0.42	1.67	4.63	3.97
Russia	35.40	19.00	3.33	0.50	2.29	0.66	6.78	5.77
Singapore	7.60	15.00	4.91	0.50	0.03	3.00	8.44	7.17

2004 FIXED R TCP (US CENTS)								
Country	1997 Fixed TCP	1997 Fixed BM	A Int'l Trans	B Gateway Switch	C DPL	D Local Retail Rate	A+B+C+D	(A+C+D) -16% + B
South Africa	16.90	19.00	3.96	0.50	0.38	1.52	6.36	5.42
Spain	18.10	15.00	1.17	0.50	0.29	0.83	2.79	2.42
Sweden	10.00	15.00	2.66	0.50	0.09	1.71	4.96	4.25
Switzerland	20.60	15.00	2.85	0.50	0.39	1.81	5.55	4.74
Taiwan	13.90	15.00	1.07	0.50	0.09	0.30	1.96	1.72
Thailand	17.10	19.00	2.03	0.50	0.12	1.23	3.88	3.34
Trinidad	14.60	19.00	3.56	0.50	0.16	0.38	4.60	3.94
Turkey	17.90	19.00	2.73	0.50	0.07	1.36	4.66	3.99
U.A.E.	7.70	15.00	2.60	0.50	0.64	0.00	3.74	3.22
U.K.	13.00	15.00	0.10	0.50	0.12	1.07	1.79	1.58
Uruguay	22.30	19.00	0.66	0.50	0.19	0.66	2.01	1.76
Venezuela	23.80	19.00	0.90	0.50	0.10	0.85	2.35	2.05
Vietnam	24.70	23.00	7.73	0.50	0.55	0.20	8.98	7.62
AVERAGE							4.70	4.03

AVERAGE	HIGH (15 CENT BM)	4.36
AVERAGE	UPPER MIDDLE	4.62
AVERAGE	LOWER MIDDLE	4.78
AVERAGE	MIDDLE AVERAGE (19 CENT BM)	4.71
AVERAGE	LOW	5.10
AVERAGE	TELEDENSITY <1	7.48
AVERAGE	LOW AVERAGE (23 CENT BM)	5.57

\* Avoided cost deduction removed from tariffed components: international transmission, DPL, and local retail rate.

# 2004 MOBILE R TCP (US CENTS)

	1997 Fixed TCP	1997 Fixed BM	A Int'l Trans	B Gateway Switch	C DPL	D National Retail Rate	A+B+C+D	(A+C+D) - 16% + B
Argentina	32.10	19.00	1.88	0.50	2.29	4.16	8.83	7.49
Australia	18.70	15.00	2.67	0.50	1.39	12.24	16.80	14.19
Austria	31.40	15.00	3.12	0.50	0.12	3.87	7.61	6.47
Bahamas	19.90	15.00	1.01	0.50	0.15	7.50	9.16	7.77
Barbados	12.00	19.00	1.90	0.50	0.10	11.06	13.56	11.47
Belgium	14.10	15.00	1.37	0.50	0.04	6.01	7.92	6.73
Bermuda	9.90	15.00	3.07	0.50	1.21	5.00	9.78	8.29
Brazil	27.80	19.00	1.22	0.50	0.27	5.61	7.60	6.46
Chile	18.60	19.00	2.76	0.50	5.85	7.64	16.75	14.15
Colombia	18.50	19.00	1.75	0.50	0.35	4.99	7.59	6.46
Costa Rica	10.30	19.00	1.50	0.50	0.09	3.37	5.46	4.66
Czech Rep.	19.00	19.00	2.80	0.50	0.62	4.61	8.53	7.25
Denmark	14.40	15.00	1.08	0.50	0.08	5.18	6.84	5.83
Dominican Rep.	14.50	19.00	3.04	0.50	0.14	3.06	6.74	5.74
Ecuador	10.30	19.00	4.21	0.50	0.95	10.00	15.66	13.23
Egypt	17.20	23.00	1.25	0.50	0.01	2.04	3.80	3.27
El Salvador	11.80	19.00	3.20	0.50	0.36	4.44	8.50	7.22
France	17.50	15.00	1.03	0.50	0.07	7.11	8.71	7.39
Germany	19.80	15.00	1.51	0.50	0.03	7.14	9.18	7.79
Greece	23.00	19.00	2.75	0.50	0.24	9.53	13.02	11.02
Guatemala	10.30	19.00	2.23	0.50	0.30	2.28	5.31	4.54
Guyana	12.00	23.00	2.80	0.50	1.06	3.64	8.00	6.80
Haiti	30.40	23.00	3.07	0.50	1.61	6.61	11.79	9.98
Honduras	16.60	23.00	3.21	0.50	0.37	8.50	12.58	10.65
Hong Kong	7.00	15.00	4.51	0.50	0.11	3.34	8.46	7.19
Hungary	14.40	19.00	2.42	0.50	0.56	5.01	8.49	7.21

# 2004 MOBILE R-TCP (US CENTS)

	1997 Fixed TCP	1997 Fixed BM	A Int'l Trans	B Gateway Switch	C DPL	D National Retail Rate	A+B+C+D	(A+C+D) - 16% + B
India	31.20	23.00	0.49	0.50	0.42	1.31	2.72	2.36
Indonesia	35.50	19.00	6.77	0.50	0.04	10.34	17.65	14.91
Ireland	18.00	15.00	1.45	0.50	0.37	5.54	7.86	6.68
Israel	8.50	15.00	2.87	0.50	0.63	3.93	7.93	6.74
Italy	18.20	15.00	0.61	0.50	0.12	7.92	9.15	7.77
Jamaica	8.70	19.00	1.37	0.50	0.15	3.42	5.44	4.65
Japan	19.70	15.00	1.24	0.50	0.71	9.10	11.55	9.78
Jordan	23.00	19.00	3.21	0.50	1.04	4.06	8.81	7.48
Kenya	42.60	23.00	4.17	0.50	1.61	8.27	14.55	12.30
Korea	12.80	19.00	3.00	0.50	0.30	3.46	7.26	6.18
Kuwait	9.00	15.00	6.59	0.50	0.61	3.33	11.03	9.35
Malaysia	22.40	19.00	4.43	0.50	0.06	5.76	10.75	9.11
Mexico	16.80	19.00	0.55	0.50	0.20	4.30	5.55	4.74
Netherlands	9.80	15.00	0.98	0.50	0.02	7.28	8.78	7.46
New Zealand	23.80	15.00	4.84	0.50	1.22	9.32	15.88	13.42
Nicaragua	12.30	23.00	3.75	0.50	1.25	10.50	16.00	13.52
Norway	11.60	15.00	1.36	0.50	0.03	5.80	7.69	6.54
P.R. of China	17.70	23.00	1.26	0.50	0.15	5.14	7.05	6.00
Pakistan	26.70	23.00	4.99	0.50	2.05	0.87	8.41	7.14
Panama	19.40	19.00	2.49	0.50	0.60	8.50	12.09	10.24
Peru	16.10	19.00	1.07	0.50	2.85	5.83	10.25	8.69
Philippines	23.90	19.00	4.73	0.50	0.86	2.49	8.58	7.29
Poland	24.60	19.00	3.05	0.50	0.53	8.48	12.56	10.63
Portugal	23.90	15.00	2.04	0.50	0.42	5.66	8.62	7.32
Russia	35.40	19.00	3.33	0.50	2.29	8.00	14.12	11.94
Singapore	7.60	15.00	4.91	0.50	0.03	3.47	8.91	7.56

2004 MOBILE R-TCP (US CENTS)								
	1997 Fixed TCP	1997 Fixed BM	A Int'l Trans	B Gateway Switch	C DPL	D National Retail Rate	A+B+C+D	(A+C+D) - 16% + B
South Africa	16.90	19.00	3.96	0.50	0.38	6.74	11.58	9.80
Spain	18.10	15.00	1.17	0.50	0.29	8.06	10.02	8.49
Sweden	10.00	15.00	2.66	0.50	0.09	9.34	12.59	10.66
Switzerland	20.60	15.00	2.85	0.50	0.39	7.39	11.13	9.43
Taiwan	13.90	15.00	1.07	0.50	0.09	2.64	4.30	3.69
Thailand	17.10	19.00	2.03	0.50	0.12	9.98	12.63	10.69
Trinidad	14.60	19.00	3.56	0.50	0.16	7.93	12.15	10.28
Turkey	17.90	19.00	2.73	0.50	0.07	10.36	13.66	11.55
U.A.E.	7.70	15.00	2.60	0.50	0.64	3.47	7.21	6.14
U.K.	13.00	15.00	0.10	0.50	0.12	5.13	5.85	4.99
Uruguay	22.30	19.00	0.66	0.50	0.19	4.92	6.27	5.34
Venezuela	23.80	19.00	0.90	0.50	0.10	1.57	3.07	2.65
Vietnam	24.70	23.00	7.73	0.50	0.55	5.70	14.48	12.24
AVERAGE							9.70	8.23

AVERAGE	HIGH (15 CENT BM)	9.32
AVERAGE	UPPER MIDDLE	10.02
AVERAGE	LOWER MIDDLE	9.89
AVERAGE	MIDDLE AVERAGE (19 CENT BM)	9.95
AVERAGE	LOW	9.13
AVERAGE	TELEDENSITY <1	9.17
AVERAGE	LOW AVERAGE (23 CENT BM)	9.94

\* Avoided cost deduction removed from tariffed components: international transmission, DPL, and national retail (usage) rate.

## Country-Specific Per Minute Tariffs for International Transmission

	Country	Bandwidth	Term	Monthly Tariff Local	Monthly Tariff US \$	Cents per Minute	Notes
1	Argentina	1.92	5 years		16,811	1.88	Telefonica; 15% discount
2	Australia	2.048	5 years	68,048	43,626	4.54	Telstra; 5 year, 2 circuit, 19% discount; includes local end
		2.048	1 Year	40,000	25,644	2.67	Optus; local loop charges included
3	Austria	2.048	None	28,122	30,577	3.12	Lynx; Telekom; local loop charges included
4	Bahamas	2.048	5 Years	9,710	9,710	1.01	Lynx data for BTC; local loop included
5	Barbados	2.048	None	36,200	18,192	1.90	Lynx data for Bartel
6	Belgium	2.048	1 Year	12,100	13,156	1.37	Belgacom; no discount
7	Bermuda	2.048	4 years	29,512	29,512	3.07	C&W; 20% discount
8	Brazil	2.048	5 years	34,618	11,715	1.22	Embratel
9	Chile	2.048	5 years		26,500	2.76	Entel
10	Colombia	2.048	5 years		16,835	1.75	Telecom; 5 year, 22% discount; 3% discount for 2-5 circuits
11	Costa Rica	2.048	5 years		14,400	1.50	ICE
12	Czech Republic	2.048	None	802,500	26,892	2.80	Cesky; no discount
13	Denmark	2.048	None	70,560	10,330	1.08	TeleDanmark; no discount
14	Dominican Rep.	1.5	5 years		23,375	3.04	Codetel; 15%, 5 year discount
15	Ecuador	2.04	None		40,400	4.21	Pacifictel and Andinetel
16	Egypt	2.048	none		12,000	1.25	Telecom Egypt
17	El Salvador	2.048	5 years		30,738	3.20	CTE
18	France	2.048	5 years	9,102	9,867	1.03	FT
19	Germany	2.048	4 years	13,324	14,487	1.51	DT
20	Greece	2.048	5 years	24,299	26,420	2.75	OTE; 5 year, 10% discount
21	Guatemala	2.048	1 year		21,436	2.23	Telgua
22	Guyana	2.048	5 years		26,864	2.80	GT&T; 20%, 5 year discount; backhaul and interexchange charge added.
23	Haiti					3.07	No data available; Bermuda used as a surrogate
24	Honduras	2.048	1 Year		30,823	3.21	Hondutel; satellite circuit; no discount
25	Hong Kong	2.048	5 years	337,500	43,268	4.51	PCCW; 5 year, 10% discount
26	Hungary	2.048	None	5,500,000	23,254	2.42	Matev; no discount
27	India	45	5 year	4,531,250	98,872	0.49	VSNL; 25% discount+I55
28	Indonesia	2.048	5 year		65,000	6.77	PT Indosat; local end included
29	Ireland	2.048	1 year	12,833	13,953	1.45	Eircom
30	Israel	2.048	None	122,950	27,590	2.87	Bezeq; no discount
31	Italy	45	None	113,981	123,910	0.61	TI
32	Jamaica	2	None		13,125	1.37	C&W; Lynx monthly rate
33	Japan	45	6 years	29,370,000	250,321	1.24	NTT; 11% discount
34	Jordan	2.048	None	21,827	30,785	3.21	JTC; satellite circuit; no discount
35	Kenya	2.048	None		39,987.93	4.17	P&T Corp;
36	Korea	2.048	5 years	34,000,000	28,849	3.00	Telecom; 15% plus 20% discount

## Country-Specific Per Minute Tariffs for International Transmission

	Country	Bandwidth	Term	Monthly Tariff Local	Monthly Tariff US \$	Cents per Minute	Notes
37	Kuwait	2.048	None	19,000	63,304	6.59	MoC; no discount
38	Malaysia	2.048	5 Years	161,625	42,540	4.43	Telekom
39	Mexico	34	1 year	932,136	84,358	0.55	Telmex; 2000 km; no discount
40	Netherlands	45	1 Year	181,973	197,859	0.98	KPN
41	New Zealand	1.5	1 Year	64,747	37,139	4.84	Telecom; cable circuit
42	Nicaragua	64 kbps	5 years		1,200	3.75	Enitel; satellite circuit
43	Norway	2.048	None	99,400	13,011	1.36	TeleNor; no discount
44	P.R. of China	2.048	None	100,000	12,080	1.26	MPT; local end included
45	Pakistan	2.048	1 year		47,883	4.99	PTCL
46	Panama	2.048	5 years	23,940	23,940	2.49	C&W
47	Peru	2.048	5 years	35,776	10,275	1.07	Telefonica
48	Philippines	2.048	5 years		45,360	4.73	Globe Telecom
49	Poland	2.048	None	117,188	29,309	3.05	TPSA
50	Portugal	2.048	None	18,000	19,571	2.04	Portugal Telecom; no discount
51	Russia	2.048	None		32,000	3.33	Rostelcom; Zone 4, highest rate band within Russia
52	Singapore	2.048	1 year	82,610	47,104	4.91	SingTel; undisclosed discounts available
53	South Africa	8 mbps	5 Years	1,123,150	152,075	3.96	Telkom
54	Spain	34	5 years	164,707	179,086	1.17	TE; 13% discount
55	Sweden	1.984 mbps	5 Years	209,558	24,728	2.66	Telia; 5 year, 10% discount
56	Switzerland	2.048	3 Year	38,781	27,391	2.85	Lynx; Swisscom; local loop charges included
57	Taiwan	2 mbps	None	350,000	10,255	1.07	CHT; no discount
58	Thailand	2 mbps	None	800,000	19,456	2.03	CAT; cable circuit; no discount
59	Trinidad	2 mbps	3 Year		34,200	3.58	TSTT
60	Turkey	2 mbps	5 years	19,068	26,203	2.73	TTSA
61	U.A.E.	2	5 years	91,728	24,978	2.60	Etisalat; 20% vol. discount
62	United Kingdom	45	5 years	12,892	20,327	0.10	BT; 155 available
63	Uruguay	2	1 Year	174,702	6,290	0.66	Antel; includes local loop
64	Venezuela	2	None	13,914,317	8,710	0.90	CANTV
65	Vietnam	2	None		74,215	7.73	DGT; no discount

## Country-Specific Per Minute Tariffs for Domestic Private Lines

	Country	Bandwidth	Term	Monthly Tariff Local	Monthly Tariff US \$	Cents per Minute	Notes
1	Argentina	2 mbps			21,964	2.29	Telefonica; over 840 km; 20% discount
2	Australia	2 mbps	None	20,800	13,335	1.39	Telstra; zone 5, over 745 km
3	Austria	155 mbps	None	67,500	73,393	0.12	Telecom Austria; no discount
4	Bahamas	2 mbps	5 Years	1,420	1,420	0.15	Lynx data for BTC long distance circuit
5	Barbados	1.5 mbps	None	1,530	769	0.10	Lynx data for BarTel; volume discount
6	Belgium	140 mbps	5 years	20,928	22,755	0.04	Belgacom; 12.5% discount, 5 years; 5% volume discount
7	Bermuda	1.5 mbps	3 years	310	310	1.21	Lynx; BTC; discount for over 4 circuits
8	Brazil	155 mbps	5 Years	480,311	162,537	0.27	Embratel; over 1000 km
9	Chile			39,249,000	56,204	5.85	Entel; over 659 km; very steep rates for long distances
10	Colombia	2 mbps	4 years	9,686,775	3,405	0.35	Telecom; 15% discount for 4 years; 10% for 11+ circuits
11	Costa Rica	2 mbps	None	324,800	825	0.09	ICE; national rate
12	Czech Republic	2 mbps	None	178,250	5,908	0.62	Cesky; over 260 km; no discount
13	Denmark	2 mbps	None	5,000	732	0.08	TeleDanmark; over 75 km
14	Dominican Rep.	1.5 mbps	5 years	33,600	1,053	0.14	Codetel; 15% volume discount; 15 %, 5 year discount
15	Ecuador	2 mbps	None		9,160	0.95	Pacifictel & Andinatel have same tariff
16	Egypt	155 mbps	None	43,333	7,046	0.01	Telecom Egypt; 500 km; 3% for every additional 50 km
17	El Salvador	2 mbps	5 Years		3,476	0.36	CTE; undisclosed discounts available for 5+ services
18	France	155 mbps	5 years	39,015	42,421	0.07	FT; 15% discount for 5 years; one end in Paris; 300km
19	Germany	155 mbps	5 Years	14,735	16,021	0.03	DT; 350 km circuit; 31 euros per additional km
20	Greece	2 mbps	None	2,157	2,345	0.24	OTE; 150 km; no discount
21	Guatemala	2 mbps	1 year		2,909	0.30	Telgua
22	Guyana	2 mbps	None		10,140	1.06	GT&T; includes inter-exchange charge
23	Haiti					1.61	No data available; Kenya rate used as a surrogate
24	Honduras	2 mbps	5+ years		3,553	0.37	Hondutel; 5+ years, 15% discount
25	Hong Kong	1.544 mbps	none	6,400	820	0.11	PCCW
26	Hungary	2 mbps	None	1,277,252	5,400	0.56	Matev; no discount; between other areas
27	India	2 mbps	None	183,333	4,000	0.42	BSNL; over 500 km
28	Indonesia	140 mbps	None	2,308,628,250	271,033	0.04	PTTelcom; over 1000 km; no discount
29	Ireland	2 mbps	None	3300	3,588	0.37	Eircom; 300 km; no discount
30	Israel	2 mbps	None	26,901	6,036	0.63	Bezeq; 150 km; 13% volume discount
31	Italy	155 mbps	1 year	64,144	69,744	0.12	TI; 300 km; discounts available, but not disclosed
32	Jamaica	1.5 mbps	None	66,378	1,134	0.15	C&W; Lynx rate for long distance
33	Japan	150 mbps	6 Years	6,372,400	54,312	0.71	NTT; 240 km; ¥365,000 per additional 20 km
34	Jordan	2 mbps	None	7,047	9,939	1.04	JTC; highest published rate, includes local loop charges; no discount
35	Kenya	2 mbps	None	1,180,584	15,489	1.61	over 800 km for PL length
36	Korea	45 mbps	None	70,614,700	59,917	0.30	KT; over 400 km; no discounts
37	Kuwait	64 kbps	None	58	193	0.61	MoC; 10 km
38	Malaysia	155 mbps	None	138,500	36,453	0.06	Telekom; 300 km



## Country-Specific Per Minute Tariffs for Domestic Private Lines

	Country	Bandwidth	Term	Monthly Tariff Local	Monthly Tariff US \$	Cents per Minute	Notes
39	Mexico	34 mbps	1Year	331,368	29,989	0.20	Telmex; no discount; 805 km
40	Netherlands	140 mbps	None	9,257	10,065	0.02	KPN; 20% volume discount
41	New Zealand	2 mbps	None	20,460	11,738	1.22	Telecom; Step d at highest rate
42	Nicaragua	64 kbps	None		400	1.25	Enitel; inter-regional rate
43	Norway	34 mbps	None	35,950	4,706	0.03	TeleNor; 300 km; NOK 90 per additional km
44	P.R. of China	2 mbps	None	12,000	1,450	0.15	MPT; National charge; local end included
45	Pakistan	2 mbps	1 Year	1,136,875	19,725	2.05	TCL; 1000 km length; R850 per additional km
46	Panama	2 mbps	None	5,770	5,770	0.60	C&W; local end not included
47	Peru	2 mbps	7 years		27,403	2.85	Telefonica; satellite circuit
48	Philippines	2 mbps	None	450,000	8,213	0.86	PLDT; 250 km length of circuit; P1440 per additional km
49	Poland	2 mbps	None	20,200	5,052	0.53	TPSA; 300 km
50	Portugal	2 mbps	2 year	3,736	4,062	0.42	Portugal Telecom; 12%, 2 year discount
51	Russia	2 mbps	None		22,000	2.29	Rostelcom; zone 1 to zone 6 rate
52	Singapore	155 mbps	None	32,000	18,246	0.03	SingTel; non-central zone "premium" rate
53	South Africa	140 mbps	None	1,728,918	234,095	0.38	Telkom; 400 km
54	Spain	34 mbps	5 years	41,118	44,707	0.29	TE; 500 km, anywhere in Spain
55	Sweden	34 mbps	None	128,550	15,169	0.09	Telia; rural location; 500 km
56	Switzerland	2.048	None	5,368	3,791	0.39	Lynx; Swiscom; Geneva to Zurich
57	Taiwan	2 mbps	None	28,000	820	0.09	CHT; highest published rate for city-pair connections
58	Thailand	140 mbps	None	3,019,000	73,422	0.12	TOT; over 600 km
59	Trinidad	1.5 mbps	3 Year	7,540	1,226	0.16	TSTT; interexchange rate
60	Turkey	155 mbps	None		39,504	0.07	Lynx; TTAS; "long distance" rate
61	U.A.E.	2 mbps	None	22,500	6,127	0.64	Etisalat; over 120 km
62	United Kingdom	155 mbps	5 Years	45,662	71,996	0.12	BT; 250 km; additional 172.50 Euros per km
63	Uruguay	2 mbps	None	49,460	1,781	0.19	Antel; over 100 km; no discount
64	Venezuela	34 mbps	None	25,124,765	15,728	0.10	CANTV; 500 km estimate
65	Vietnam	155 mbps	None		329,649	0.55	Lynx; VTN; over 1800 km;

## **Country-Specific Per Minute Local Tariffs for Fixed National Extension**

### **Argentina                      0.59 cents per minute**

Telefonica and Telecom charge an average of A\$ 0.0175 for local calling which equates to 0.59 cents per minute. Only Telecom offers discounts of 25% for length of service and 6% for volume billing. No discounts are taken.

### **Australia                      2.30 cents per minute**

Telstra offers business customers a "Quick call" local calling option at A\$ 0.027 per minute for the first five minutes and A\$ 0.036 per minute thereafter. The 5+ minute rate is used for all minutes and equates to 2.30 cents per minute.

### **Austria                      2.94 cents per minute**

Telecom Austria provides a "Tik Tak Business" option with local calls at E 0.027 per minute at all times. This equates to 2.94 cents per minute.

### **Bahamas                      5.06 per minute**

Lynx reports that BTC provides peak domestic long distance calling at B\$0.40 per minute for a rate of \$0.40 per minute. No data is available for local calling. The highest rate in the Caribbean area of 5.06 cents per minute for Bermuda is used as a surrogate.

### **Barbados                      \$ 0.00 per minute**

Lynx reports BarTel provides free local and domestic long distance calling with monthly service subscriptions for an effective rate of \$0.00 per minute.

### **Belgium                      4.24 cents per minute**

Belgacom charges an average of E 0.027 for local calls. Additionally, a call set up charge of E 0.041 per call is spread over the average call time from the U.S. of 3.40 minutes. With the pro-rated call set up charge, the total per minute charge equates to E 0.039 or 4.24 cents.

### **Bermuda                      5.06 cents per minute**

Per Lynx, BTC charges B\$ 0.20 for all local calls up to 1 hour in length. The first 50 calls per month are free, but are not included in these calculations. The U.S. sent 13,032,208 calls for 51,502,311 minutes to Bermuda, for an effective per minute rate of B\$ 5.06.

### **Brazil                      1.08 cents per minute**

Telefonica del Brazil charges an average of R 0.01625 per minute for local calls. Additionally, there is a call set up charge of R 0.0655 spread over the average international call length of 4.08 minutes. The total charge is R 0.032 or 1.08 US cents per minute.

### **Chile                      1.59 cents per minute**

CTC charges different rates for zones 1-4, zone 5 and zone 6. Because most of Chile is in zones 1-4, the average rate of CP 11.105 is used and equates to 1.59 cents per minute.

**Colombia**                      **3.13 cents per minute**

Telecom charges CP 89.14 per minute at all times for business local calling. This equates to 3.13 cents per minute.

**Costa Rica**                      **0.62 cents per minute**

ICE charges an average rate of C 2.4375 which equates to 0.62 cents per minute.

**Czech Republic**                      **3.52 cents per minute**

Cesky Telecom charges an average of CZK 1.05 for local calls which equates to a rate of 3.52 cents per minute.

**Denmark**                      **2.78 cents per minute**

TeleDanmark charges an average of DKK 0.15. There is also a call set up charge of DKK 0.20 per call. The average length of a call from the U.S., per the FCC's 43.61 report, is 4.81 minutes. The effective per minute rate is DKK 0.19 or 2.78 cents per minute.

**Dominican Republic**                      **0.00 cents per minute**

Codeltel offers various residential plans with free local usage as well as a high volume subscription plan for business customers with free local usage.

**Ecuador**                      **2.44 cents per minute**

Pacifictel and Andinatel charge three different rate categories for local service. All rates are in US dollars and range from 0.0023 to 0.0244 cents per minute at all times. The highest rate category of \$0.0244 is used.

**Egypt**                      **0.27 cents per minute**

Telecom Egypt charges E pounds 0.0167 for all calls within the same governate at all times.

**El Salvador**                      **1.78 cents per minute**

CTE includes 300 free units in the monthly rental. Additionally, CTE charges C 0.156 per minute for additional local calls at all times which equates to 1.78 cents per minute.

**France**                      **1.65 cents per minute**

France Telecom charges an average of E 0.0195. FT offers a volume discount up to 22% for bi-monthly billing of over 100,000 euros. The discounted average rate is E 0.01521 or 1.65 cents per minute.

**Germany 2.15 cents per minute**

DT's "BusinessCall" local service charges an average of E 0.02295. With a volume discount of 14%, the discounted total of E 0.019 equates to a rate of 2.15 cents per minute.

**Greece 2.83 cents per minute**

OTE charges E 0.026 per minute for local calls at all times for a rate of 2.83 cents per minute.

**Guatemala 2.34 cents per minute**

Telgua charges Q 0.18 at all times for local calls for a charge of 2.34 cents per minute.

**Guyana 0.08 cents per minute**

GT&T charges an average of G\$ 0.15. No discounts are available for a charge of 0.08 cents per minute.

**Haiti 5.06 cents per minute**

No data is available for Haiti. The highest rate in the Caribbean area of 5.06 cents per minute for Bermuda is used as a surrogate.

**Honduras 2.08 cents per minute**

Hondutel charges HNL 0.35 per minute at all times for local calls. No discount is available for a rate of 2.08 cents per minute.

**Hong Kong 0.00 cents per minute**

All local calls are free in Hong Kong.

**Hungary 2.28 cents per minute**

Matav charges an average of HUF 5.40 which equates to 2.28 cents per minute.

**India 0.87 cents per minute**

BSNL charges varying rates for both rural and urban local calls. The rates increase with volume. The highest rate is R 1.2 per call for calls over 500 per month. "Due to technical feasibility", calls are capped at 3 minutes. The highest rate is therefore R 0.40 per minute which equates to 0.87 cents per minute.

**Indonesia 0.81 cents per minute**

PTTecom charges an average of R69.33 which equates to 0.81 cents per minute.

**Ireland 1.66 cents per minute**

Eircom has a multi-line discount three rate program for an average of E0.01523 which equates to a rate of 1.66 cents per minute.

**Israel 0.96 cents per minute**

Bezeq charges an average of NIS 0.0427 which equates to a rate of 0.96 cents per minute.

**Italy 2.30 cents per minute**

Telecom Italia charges an average of E 0.01245. In addition, TI charges 0.0516 euros for call set-up; the average international call from the US is for 4.14 minutes per call which adds 1.25 euros to the per minute rate. Various discounts up to 30% are available in some circumstances. A 15% discount is applied here for a rate of 2.30 cents per minute.

**Jamaica 0.86 cents per minute**

Per Tarifica, C&W charges 15 cents per minute for intra-parish local calls at all times. However, per Lynx, C&W charges an average of J\$0.50 for a rate of 0.86 cents per minute.

**Japan 2.21 cents per minute**

NTT charges an average rate of Y 2.596 which equates to a rate of 2.21 cents per minute.

**Jordan 1.21 cents per minute**

JTC charges an average rate of JD 0.0085 which equates to a rate of 1.21 cents per minute.

**Kenya 1.77 cents per minute**

P&T Corp. charges K 1.35 per minute at all times for a local call which equates to a rate of 1.77 cents per minute.

**Korea 0.88 cents per minute**

Telecom charges an average rate of W10.38 which equates to a rate of 0.88 cents per minute.

**Kuwait 0.00 cents per minute**

Local and national calls are free at all times.

**Malaysia 1.05 cents per minute**

Telekom charges R0.04 per minute for local calling at all times, equating to 1.05 cents per minute.

**Mexico 1.92 cents per minute**

TelMex charges P 1.418 for an untimed local call. Per the FCC 43.61 report, there were 816,347,782 messages from the U.S. to Mexico consisting of 5,458,695,092 minutes. This equates to a calculated charge of P 0.212 per minute or 1.92 cents per minute.

**Netherlands 2.28 cents per minute**

KPN charges an average rate of 0.01413 euros. In addition there is a call set up charge of 0.0348 euros. The average length of an international call from the U.S. to the Netherlands is 3.82 minutes which adds E 0.0091 to the per minute average rate. A 10% discount is available and taken which equates to a total rate of 2.28 cents per minute.

**New Zealand 1.59 cents per minute**

Telecom charges business users an average rate of NZ\$ 0.0277 which equates to a rate of 1.59 cents per minute.

**Nicaragua**                      **1.65 cents per minute**  
Enitel charges an average rate of C 0.25 which equates to a rate of 1.65 cents per minute.

**Norway**                        **3.53 cents per minute**  
TeleNor charges an average rate of NOK 0.14. In addition, there is a call set-up charge of NOK 0.48. The average length of a call from the U.S. is 3.66 minutes. The resulting per minute rate is NOK 0.27 or 3.53 cents per minute.

**P.R. of China**                **4.83 cents per minute**  
MPT charges up to Y 0.40 per minute for inter-area local calling, for a rate of 4.83 cents per minute.

**Pakistan**                      **0.70 cents per minute**  
TCL charges Rs 2.01 for a five-minute local call, for Rs 0.402 per minute or 0.70 cents per minute.

**Panama**                        **2.00 cents per minute**  
C&W charges PAB 0.02 per minute to business for local calls or 2.00 cents per minute.

**Peru**                              **3.78 cents per minute**  
Telefonica charges an average rate of NS 0.1315. The average equates to a rate of 3.78 cents per minute.

**Philippines**                  **0.00 cents per minute**  
PLDT offers unlimited local free local calls with its exchange service.

**Poland**                         **1.31 cents per minute**  
TPSA offers an average rate of PLN 0.075. Up to a 30% discount is available based on volume and is taken in these calculations for a rate of 1.31 cents per minute.

**Portugal**                       **3.34 cents per minute**  
Portugal Telecom charges an average rate of E 0.01475. However, the initial minute is billed at E 0.0798. The average length of a U.S. originated call per the FCC's 43.61 report is 4.91 minutes. The calculated rate for a 4.91 minute call is E 0.1522 for an average per minute charge of E 3.10, or 3.34 cents.

**Russia**                         **1.31 cents per minute**  
MGTS provides local calling to business in Moscow for R 0.40 per minute for minutes in excess of 613 per month. The excess minute rate equates to 1.31 cents per minute.

**Singapore**                    **5.99 cents per minute**  
SingTel charges an average rate of S\$ 0.105. This equates to a rate of 5.99 cents per minute.

**South Africa            3.03 cents per minute**

Telkom charges an average rate of R 0.2235 which equates to a per minute rate of 3.03 cents.

**Spain                    1.65 cents per minute**

Telefonica charges an average rate of 0.0151 euros which equates to a rate of 1.65 cents per minute.

**Sweden                3.42 cents per minute**

Telia charges an average rate of K 0.138 for local and national calling plus a call set up charge of K 0.36 per call. The average length of a call from the U.S. is 2.31 minutes. The effective rate is therefore K 0.29 for a rate of 3.42 cents per minute.

**Switzerland           3.62 cents per minute**

Swisscom charges an average rate of CHF 0.05575. With an 8% volume discount, the rate equates to 3.62 cents per minute.

**Taiwan                 0.59 cents per minute**

CHT charges an average rate of T\$ 0.20 which equates to a rate of 0.59 cents per minute.

**Thailand                2.46 cents per minute**

TOT charges B 3.00 per call for local calling. The U.S. sent 39,681,490 calls for 117,845,253 minutes to Thailand for an effective per minute rate of B 1.01 or 2.46 cents per minute.

**Trinidad               0.76 cents per minute**

TSTT charges a flat rate of TT\$ 0.23 for a local call. The U.S. sent 24,479,355 calls for 119,903,093 minutes to Trinidad for an effective per minute rate of TT\$ 0.047, or 0.76 cents per minute.

**Turkey                 2.72 cents per minute**

TTAS charges an average rate of TL 38,335 which equates to a rate of 2.72 cents per minute.

**U.A.E.                  0.00**

Etisalat provides free local calls within the same Emirate, even if made through multiple exchanges.

**United Kingdom      2.14 cents per minute**

BT charges an average rate of 0.01823 Pounds. In addition, discounts up to 25.5% are available to corporate customers and used here for a rate of 2.14 cents per minute.

**Uruguay                1.31 cents per minute**

Antel charges an average rate of UP 0.363 which equates to a rate of 1.31 cents per minute.

**Venezuela      1.69 cents per minute**

CANTV provides local calls at Bs 27 at all times for business users which equates to a rate of 1.69 cents per minute.

**Vietnam      0.40 cents per minute**

DGY charges D 59 per minute for local calls at all times, after 450 free calls. That rate equates to 0.40 cents per minute.



## **Country-Specific Per Minute Mobile Tariffs for Mobile National Extension**

(All rates are in cents per minute.)

### **Argentina                      8.31 cents per minute**

CTI provides a Simple 220 plan with an average rate of .18 pesos. Movicom provides the Federal Capital/Gran Buenos Aires Plan PCS 180, Canuecalas and Mercedes PCS 180 Pais plan, and Rest of Country PCS 180 Cuidades plan with an average rate of .31 pesos. These rates equate to a country average rate of .2449 pesos or 8.31 cents.

### **Australia                      24.47 cents per minute**

Optus provides a Your Call 250 plan with average rates of .35 Australian dollars with a connection fee of .19 Australian dollars. An average call length of 6 minutes was used. These equate to a rate of .38 Australian dollars or 24.47 cents.

### **Austria                      7.74 cents per minute**

Mobilkom provides an A1 Fun Plus plan with an average rate of .06 euros. ONE provides a First ONE plan and a First ONE Fair plan with an average rate of .083 euros. T-Mobile provides a Euro Mini plan and a Euro Freizeit plan with an average rate of .0833 euros. Tele-ring provides a Tele-Ring Mobile 20 plan with an average rate of .0583 euros. These rates equate to a country average rate of .071 euros or 7.74 cents.

### **Bahamas                      15 cents per minute**

The Bahamas Telecom Company provides a General plan with an average rate of .15 Bahamian dollars, which equates to a rate of .15 Bahamian dollars or 15 cents.

### **Barbados                      22.11 cents per minute**

C&W provides a Bus 50,000 plan with an average rate of .44 Barbados dollars, which equates to a rate of .44 Barbados dollars or 22.11 cents.

### **Belgium                      12.01 cents per minute**

BASE provides a Variable Option, Tariff 3 plan with an average rate of .099 euros and a call setup charge of .041 euros. Belgacom provides a ProxiFun and a ProxiPro plan with an average rate of .1020 euros. Mobistar provides an Optimum for Me Plan and an Optimum Together plan with an average rate .12 euros. An average call length of 4 minutes was used. These rates equate to a country average rate of .1105 euros or 12.01 cents.

### **Bermuda                      9.99 cents per minute**

Telecom provides a Bermuda 1000 plan with an average rate of .10 Bermudian dollars, which equates to a rate of 9.99 cents.

**Brazil**                      **11.21 cents per minute**

Telesp Cellular provides a Digital Plan and a Mini Plan with an average rate of .4829 reals with a call set-up charge of .70 or .77 reals. Americel provides a set of regional plans with an average rate of .1797 reals. An average call length of 6 minutes was used. Applied taxes were deducted. These rates equate to a country average rate of .3313 reals or 11.21 cents.

**Chile**                        **15.27 cents per minute**

BellSouth Chile provides a Full Movil 740 plan with an average rate of .1547 pesos. Entel provides a Plan Global 710 plan with an average rate of .1760 pesos. Telefonica Movil provides a Plan Optimo 48,900 plan with an average rate of .1274 pesos. These rates include the fees charged for calls outside the regional zones. These rates equate to a country average rate of 106.63 pesos or 15.27 cents.

**Colombia**                    **9.98 cents per minute**

CelCaribe provides a Plan Unico with an average rate of 284 pesos, or 9.98 cents.

**Costa Rica**                **6.73 cents per minute**

ICE provides a General Plan with an average rate of 27 colons, or 6.73 cents.

**Czech Republic**        **9.22 cents per minute**

EuroTel Praha provides a EuroTel Optimum Plus plan with an average rate of 3 korunas. RadioMobil provides Paegas 80, 200 and 400 Plans and a Jisota plan with an average rate of 2.5 korunas. These rates equate to a country average rate of 2.75 korunas or 9.22 cents.

**Denmark**                    **10.36 cents per minute**

Orange provides a Match plan and Level 4 plan with an average rate of .64 krone and a call set-up charge of .20 kroner. Sonofon provides Variant Plans with an average rate of .71 krone. TDC provides a MobilTalk plan with an average rate of .96 krone and a call set-up charge of .20 krone. Telia provides a Telia Classic Plus plan with an average rate of .40 krone and a call set-up charge of .20 krone. An average call length of 5 minutes was used. These rates equate to a country average rate of .7078 kroner or 10.36 cents.

**Dominican Republic**    **6.11 cents per minute**

Codetel provides a PCS 1000 plan with an average rate of 1.95 pesos, or 6.11 cents.

**Ecuador**                    **20 cents per minute**

Otelecel (BellSouth) provides an Optimo 1000 plan with an average rate of .20 Ecuador dollars, or 20 cents.

**Egypt**                        **4.07 cents per minute**

Vodafone provides a Control Smart plan, a Click Gold Smart plan, and a Club 55 plan with an average rate of .25 pounds. Mobinil provides a Mobinil 90 and a Mobinil 180 plan with an average rate of .25 pounds. These rates equate to a country average rate of .25 pounds or 4.07 cents.

**El Salvador            8.87 cents per minute**

Telefonica provides a Plan Gran Empresa with an average rate of .94 colons. Telemovil provides an Empresarial 500 plan with an average rate of 7 US cents. These rates equate to a country average rate of .7763 colons or 8.87 cents.

**France                14.21 cents per minute**

Bouygues provides a Forfait Intensive plan with an average rate of .125 euros. Orange provides a Compte Mobile 5 Hours-15 Hours Plan with an average rate of .15 euros. SFR provides an SFR Pro 1000 plan with an average rate of .117. These rates equate to a country average rate of .1310 euros or 14.21 cents.

**Germany            14.28 cents per minute**

T-Mobile provides a Telly Profi plan with an average rate of .1293 euros. E-Plus (Mobilfunk) provides a Privat plan with an average rate of .1724 euros. Vodafone D2 provides a Vodafone Premium plan with an average rate of .129 euros. O2 provides a Genion Profi and Select Profi plans with an average rate of .0948 euros. These rates equate to a country average rate of .1313 euros or 14.28 cents.

**Greece                19.06 cents per minute**

Cosmote provides a Cosmote 120 and 150 plan with an average rate of .114 euros. Stet Hellas provides a Telestet 550 plan with an average rate of .18 euros with a call set-up charge of .088 euros. Vodafone provides a Vodafone 150 SMS plan with an average rate of .21 euros. An average call length of 4 minutes was used. These rates equate to a country average rate of .1753 euros or 19.06 cents.

**Guatemala           4.55 cents per minute**

PCD Digital provides a Platinum V plan with an average rate of .3495 quetzals, or 4.55 cents.

**Guyana                7.27 cents per minute**

GT&T provides a Plan D with rates that equate to a country average rate of 7.27 cents.

**Haiti                  13.21 cents per minute**

Haitel provides a Deluxe plan with an average rate of 5 gourdes, or 13.21 cents.

**Honduras            17 cents per minute**

Celtel provides a Movil 75 plan with rates that equate to 17 cents.

**Hong Kong            6.68 cents per minute**

New World provides a 288P and 488P plan with an average of .5 Hong Kong dollars. Hutchinson provides db 300, 500, 900, 1200 plans with an average of .2 Hong Kong dollars. PCCW provides a One2Free (High) plan with an average of .8 Hong Kong dollars. Peoples Telephone Co. provides A288, A388, A488 plans with an average of .5 Hong Kong dollars. SmartTone provides a \$298 plan with an average rate of .8 Hong Kong dollars. Sunday provides a 258 plan with an average rate of .3250 Hong Kong dollars.

dollars. These rates equate to a country average rate of .5211 Hong Kong dollars or 6.68 cents.

**Hungary** 10.01 cents per minute

Pannon provides a Momentum plan with an average of 28 forints. Westel provides a Westel 400 plan with an average of 19 forints. These rates equate to a country average rate of 23.67 forints or 10.01 cents.

**India** 2.62 cents per minute

Orange provides a Talk 795 plan with an average rate of 1.2 rupees, or 2.62 cents.

**Indonesia** 20.68 cents per minute

Satelindo provides a General plan with an average rate of 1767.13 rupiahs. Telkom provides a General plan with an average rate of 1755.16 rupiahs. These rates equate to a country average rate of 1,761.15 rupiahs or 20.68 cents.

**Ireland 11.08 cents per minute**

Meteor provides plans with an average rate of .07 euros. O2 provides a Twenty+ plan with an average rate of .12 euros. Vodafone provides an Extra plan with an average rate of .1157 euros. These rates equate to a country average rate of .1019 euros or 11.08 cents.

**Israel 7.85 cents per minute**

**Pelephon provides a Leisure plan with an average rate of .35 shekels or 7.85 cents.**

**Italy** **15.84 cents per minute**

Omnitel Vodafone provides a Euro Italy plan with an average rate of .183 euros with a call set-up charge of .125 euros. Telecom Italia Mobile provides a Unica 10 plan with an average rate of .083 euros. Wind provides a 24 Ore Light plan and 24 Ore Light Premium plan with an average rate of .1935 euros. Blu provides a Blu 2 Express plan and Blue 3 Express plan with an average rate of .092 euros. An average call length of 4 minutes was used. These rates equate to a country average rate of .1457 euros or 15.84 cents.

**Jamaica** . **6.84 cents per minute**

C&W provides a Performer Plus plan with an average rate of 4 Jamaican dollars, or 6.84 cents.

**Japan** 18.20 cents per minute

NTT DoCoMo provides Plan A with an average rate of 24 yen. J-Phone provides a Platinum Pack plan with an average rate of 20 yen. DDI provides a Set Plan (Jumbo) with an average rate of 20 yen. These rates equate to a country average of 21.35 yen or 18.20 cents.

**Jordan** 8.11 cents per minute

Jordan Mobile Tel Svc (JMTS) provides a Keep Close 1000 plan with an average rate of .06 dinars, or 8.11 cents.

**Kenya**                      **16.53 cents per minute**  
Safaricom provides a General plan with an average rate of 12.6 shillings, or 16.53 cents.

**Korea**                      **6.92 cents per minute**  
LG Telecom provides a Thirteen plan with an average rate of 66 won. SK Telecom Company provides an economy plan with an average rate of 108 won. Applied taxes were deducted. These rates equate to a country average of 81.56 won or 6.92 cents.

**Kuwait**                      **6.66 cents per minute**  
Mobile Telecom provides a plan with an average rate of .02 dinars, or 6.66 cents.

**Malaysia**                      **11.52 cents per minute**  
Maxis Mobile provides a M-World plan with an average rate of .23 ringgits. Telekom Cellular provides a Topaz Rate Plan with an average rate of .65 ringgits. These rates equate to a country average rate of .4377 ringgits or 11.52 cents.

**Mexico**                      **8.60 cents per minute**  
Telcel provides a les 1300 plan with an average rate of .95 pesos, or 8.60 cents.

**Netherlands**                      **14.56 cents per minute**  
Dutchtone provides an Allin Euro 40 plan with an average rate of .1 euros with a call set-up charge of .042 euros. Vodafone Libertel provides an All Vodafone 60-1000 plans with an average of .2 euros with a call set-up charge of .04 euros. KPN Mobile provides a GripNet plan with an average of .13 euros. O2 provides residential plans with an average of .15 euros. An average call length of 4 minutes was used. These rates equate to a country average of .1339 euros or 14.56 cents.

**New Zealand**                      **18.64 cents per minute**  
Telecom New Zealand provides a Go Ahead 750 plan with an average rate of .30 New Zealand dollars. Vodafone provides a Daytime 750 plan with an average rate of .35 New Zealand dollars. These rates equate to a country average of .3250 New Zealand dollars or 18.64 cents.

**Nicaragua**                      **21 cents per minute**  
BellSouth Nicaragua provides a Gerencial plan with an average rate of 21 cents.

**Norway**                      **11.60 cents per minute**  
Enitel provides an Aktive plan with an average rate of .78 kroner with a call set-up charge of .48 kroner. NetCom provides an activeTALK plan with an average rate of .8 kroner with a call set-up charge of .48 kroner. Telenor provides a Primaer plan with an average rate of .72 kroner with a call set-up charge of .476 kroner. An average call length of 4 minutes was used. These rates equate to a country average of .8862 kroner or 11.60 cents.

**P. R. of China      10.27 cents per minute**

China Mobile provides a General plan with an average rate of .85 renminbi, or 10.27 cents.

**Pakistan      1.74 cents per minute**

Mobilink provides a Star 400 plan with an average rate of 1 rupee, or 1.74 cents.

**Panama      17 cents per minute**

C&W provides a Presidente plan with an average rate of .15 balboas, which includes a local fixed rate of .02 balboas. These rates equate to 17 balboas or 17 cents.

**Peru      11.65 cents per minute**

BellSouth Peru provides a Plan Colectivo 15 and a Red Privada Celular BellSouth plan with an average rate of .14825 dollars. Telefonica Moviles provides a Plan 16999 Pyme plan with an average rate of .0847 cents. These rates equate to a country average rate of 11.65 cents.

**Philippines      4.98 cents per minute**

Globe provides a G-Max plan with an average rate of 2.73 pesos, or 4.98 cents.

**Poland      16.95 cents per minute**

Centertel provides a Meritum plan with an average rate of .65 zlotys. ERA GSM provides a Moja 100 plan with an average rate of .8 zlotys. Plus GSM provide a Czesto 150 and Czesto 100 plans with an average rate of .58 zlotys. These rates equate to a country average rate of .6777 zlotys or 16.95 cents.

**Portugal      11.31 cents per minute**

Optimus provides a Solucao Profissional-Tarifa Optimus plan with an average rate of .1 euros. TMN provides Pacote Empresas 250 through 3000 plans with an average rate of .102 euros. Vodafone provides a Planos Combi-Mais plan with an average rate of .11 euros. These rates equate to a country average rate of .104 euros or 11.31 cents.

**Russia      16 cents per minute**

MTS provides a Optima Day 24 hours on holiday plan with an average of .063 dollars. Vimpelcom provides a General plan with an average of .26 dollars. These rates equate to a country average rate of 16 cents.

**Singapore      6.94 cents per minute**

MobileOne provides a M1 Ultimate plan with an average of .12 Singapore dollars. SingTel provides a POD Zoom plan, a POD 18 plan, and a POD Lite plan with an average rate of .10 Singapore dollars. StarHub provides plans with an average rate of .15 Singapore dollars. These rates equate to a country average rate of .1217 Singapore dollars or 6.94 cents.

**South Africa      13.47 cents per minute**

MTN provides a Pro Call 1000 plan with an average rate of 1 rand. Vodacom provides a Talk 1000S plan with an average rate of .99 rands. These rates equate to an average rate of .995 rands or 13.47 cents.

**Spain**                      **16.11 cents per minute**

Vodafone provides a Plan Universal 60 with an average rate of .13 euros with a call set-up charge of .12 euros. Amena provides a Contrato Libre 30 plan with an average rate of .15 euros with a call set-up charge of .12 euros. Telefonica Moviles provides an Empresas-Tarifa Tramos Horarios plan with an average rate of .10 euros with a call set-up charge of .12 euros. Airtel provides a Plan Manana and Plan Tarde with an average rate of .12 euros with a call set-up charge of .12 euros. An average call length of 5 minutes was used. These rates equate to a country average rate of .1482 euros or 16.11 cents.

**Sweden**                      **18.68 cents per minute**

Comviq provides a Max plan with an average rate of .79 kronas and a call set-up charge of .32 kronas. TeliaSonera provides a DOF 2 plan with an average rate of 2.12 kronas and a call set-up charge of .32 kronas. Vodafone provides a Vodafone 120 plan with an average rate of 1.32 kronas and a call set-up charge of .40 kronas. An average call length of 2 minutes was used. These rates equate to a country average rate of 1.583 kronas or 18.68 cents.

**Switzerland**                      **14.77 cents per minute**

Orange provides an Orange Advanced plan with an average rate of .1858 swiss francs. Sunrise provides a Sunrise 500 plan with an average rate of .1627 swiss francs. Swisscom Mobile provides a Natel International plan with an average rate of .2788 swiss francs. These rates equate to a country average rate of .2091 swiss francs or 14.77 cents.

**Taiwan**                      **5.27 cents per minute**

CHT provides a Standard plan and a 1688 Package with an average rate of 1.8 Taiwan dollars, or 5.27 cents.

**Thailand**                      **19.95 cents per minute**

AIS provides a GSM Advance plan with an average rate of 8.2 bahts, or 19.95 cents.

**Trinidad**                      **15.85 cents per minute**

TSTT provides a Premium Saver plan with an average rate of .98 Trinidad dollars, or 15.85 cents.

**Turkey**                      **20.71 cents per minute**

Telsim AS provides a VIP Class 210 plan with an average rate of 271,186.44 lira. Turkcell provides a Professional plan with an average rate of 312,111.50 lira. These rates equate to a country average rate of 295,857.14 lira or 20.71 cents.

**United Arab Emirates**                      **6.94 cents per minute**

Etisalat provides a General plan with an average rate of .26 dirhams, or 6.94 cents.

**United Kingdom**      **10.25 cents per minute**

O2 provides an Anytime O2 1500, 5000, or 10,000 plan with an average rate of .0681 pounds. T-Mobile provides a Call Everyone plan with an average rate of .085 pounds. Orange provides a Talk 1000 and a Talk 2000 plan with an average rate of .0554 pounds. Vodafone provides a Vodafone 5300 and a 10600 plan with an average rate of .0515 pounds. These rates equate to a country average rate of .0650 pounds or 10.25 cents.

**Uruguay**      **9.83 cents per minute**

Ancel provides a Plan Commercial M. with an average rate of 2.730 pesos, or 9.83 cents.

**Venezuela**      **3.13 cents per minute**

Movilnet provides a Paquete ilimitado Noches y Fines de Semana plan with an average rate of 50 bolivars, or 3.13 cents.

**Vietnam**      **11.40 cents per minute**

Mobifone provides a General plan with an average rate of 1,702 dong, or 11.40 cents.