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WORKING DOCUMENT

ON THE INITIAL FINDINGS OF THE SECTOR INQUIRY INTO MOBILE ROAMING CHARGES

The Commission launched its investigation into mobile roaming based on concerns about price rigidity and lack of competitive offers. The aim was to establish the existing level of competition in mobile roaming markets across the EEA, to collect comparative data on possible anti-competitive practices, and to identify any structural impediments to increased competition in those markets. In January 2000 the Commission sent requests for information to approximately 200 EU mobile network operators, service providers, and national authorities to collect data to assess the situation in the mobile roaming markets in the European Union. The EFTA Surveillance Authority (ESA) simultaneously sent identical questionnaires to relevant addressees in the EFTA States. Additional data was gathered from other sources (the GSM Association).

This document summarises the preliminary findings made on the basis of the analysis of the data collected regarding the market situation for wholesale and retail mobile roaming markets for the 18 EEA States. The document does not contain data collected during the inquiry that has been marked as business secrets and provided in confidence.

The Commission's working document has been discussed with the National Competition and Regulatory Authorities and the ESA at a meeting that took place in Brussels on 24 November 2000. The conclusions of the document will be reviewed in particular regarding the necessity and scope for further action, on the basis of national authorities' reactions at and following that meeting. As the ESA carried out its parallel roaming inquiry in close co-operation with the Commission, the Commission and ESA intend to continue co-operating on the follow-up to this investigation, in accordance with the provisions of the EEA Agreement

This Working Document from the Competition DG does not represent a formal position or legal analysis of the Commission. No inference should be drawn from this document as to the precise form or content of future measures to be presented by the Commission.

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EXECUTIVE SUMMARY

The Commission's services have now completed their analysis of comparative data for the 1997-2000 period collected in the roaming sector inquiry since January 2000, and have reached a number of preliminary findings that are set out in this document.

Scope and goals of this document

This working document aims to:

- Briefly recall why the sector inquiry was launched;
- Describe the economic and technical characteristics of mobile roaming;
- Set out the general trends revealed by the sector inquiry;
- Define the relevant markets and describe their size and structure;
- Examine the indications found of possible infringements of competition law on those markets;
- Identify possible remedies to address the lack of competition on the national roaming markets.

Initial findings of the roaming inquiry

- There are at least two clearly distinct relevant markets: the wholesale roaming market and the retail roaming market. Both markets are national. In both of these markets the findings confirm the concerns that led the Commission to open the sector inquiry.
- The national wholesale markets are characterised by high concentration ratios in the range of 90%, by high barriers to entry due to the limited number of mobile licences per country (between 2 and 6), and by a general lack of incentives to reduce prices.
- During the period 1997-2000, national wholesale roaming prices differed considerably between the EEA states, more than is likely to be justified by cost differences. In addition, there have been substantial absolute as well as relative increases in wholesale roaming prices throughout this period. Because roaming retail prices are calculated by adding a mark-up on the relevant wholesale rate, roaming retail prices have gone up as well, in contrast with domestic mobile retail prices that have generally decreased.
- Most of the operators that had the lowest wholesale tariffs in 1997 have raised their tariffs gradually over the period 1997-2000, while most of the operators with relatively high tariffs have lowered their tariffs. Hence, over the period under review, wholesale tariffs have clearly converged towards a higher overall level that does not appear to bear any relation to cost.

Competition concerns

- Excessive pricing and price collusion are likely concerning both the level of wholesale rates and the mark-ups applied in retail markets.
- In a number of national markets (including those where the highest IOTs are charged) the different mobile operators charge almost identical wholesale rates which appear to reflect co-ordinated pricing behaviour or tacit collusion. In some of these markets, mobile operators apply similar retail tariffs as well.

Market structure concerns

- The high level of transparency of wholesale roaming tariffs favours collective dominance in national wholesale markets. Other relevant structural factors that contribute to possible collective dominance include high concentration ratios, a homogeneous product, similar cost structures, high barriers to entry, inelastic market demand, and the absence of a competitive fringe.

- The cross-border nature of roaming results in non-typical vertical relationships between wholesale and retail markets in different countries, because excessive prices in the national wholesale market in one EEA state lead to increasing retail prices in the national retail markets in other EEA states.
- The GSM Association's standard international roaming agreement (STIRA) and the Infocentre operated in the framework of that agreement foster price transparency and reinforce the existing oligopolistic market structure. Use of the STIRA also induces operators not to conclude unilateral roaming agreements with any market parties other than licensed mobile network operators.
- The standard non-discrimination obligations introduced by the GSM Association appear to remove incentives to introduce pro-competitive roaming services, e.g. based on preferential wholesale roaming agreements and transparent one rate retail tariffs.

Follow-up

Given the broad scope of the sector inquiry, which covers the entire EEA, co-ordination on its follow-up with the national competition authorities (NCAs) and regulatory authorities (NRAs) is perceived as necessary. This is consistent with the decentralised application of the competition rules that is at the core of the Commission's ongoing modernisation initiative¹, and with the Commission's 1998 access Notice², which gives precedence to NRAs if they can remedy competition problems based on their sector-specific powers in a timely and effective manner.

Moreover, in view of the structural problems found, it cannot be excluded that in addition to competition law enforcement, action may be required to remove any regulatory constraints on mobile operators that impede their ability to introduce more competition into the roaming markets. This also implies co-ordination. In addition, the inquiry clearly revealed cross-border issues that cannot be effectively tackled by any national competition or regulatory authority acting alone. Because unilateral action may be ineffective and may in some cases even result in hampering competition, not only co-ordination but also bilateral or EEA-wide action may be necessary.

As the EFTA Surveillance Authority (ESA) carried out a parallel roaming inquiry in close co-operation with the Commission, the Commission and the EFTA Surveillance Authority will further co-ordinate on the follow-up to this investigation in accordance with the framework set out in the EEA Agreement.

Taking into account the dynamics of the markets and the technical evolution under way the Commission intends:

- to provide legal certainty to the industry and the national competition authorities concerning differentiated roaming tariffs that would foster competition in the roaming markets. In part this certainty can be assured by individual exemption decisions. In addition, market players have expressed a need for Commission guidance on the application of competition law to roaming agreements, which could take the form of guidelines. Given the complexity of the issues at stake and the cross-border nature of roaming, the national competition authorities could also benefit from such guidance;

¹ White paper on modernisation of the rules implementing articles 85 and 86 [now 81 and 82] of the EC Treaty - *Commission programme No. 99/027 of 28.04.1999*; Proposal for a Council Regulation on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty - *COM(2000) 582 of 27.09.2000*.

² Commission Notice on the application of the competition rules to access agreements in the telecommunications sector; Framework, relevant markets and principles, OJ 1998 C 265/2.

- to revisit the terms and conditions of the standard international roaming agreement and the IOT arrangement to ensure that they do not reduce competitive pressure. To encourage the emergence of competitive offers, it should be ensured that even operators with market power would be able to apply different tariffs to roaming counterparts licensed in the same country while at the same time not discriminating against small and new market entrants.

It is further proposed:

- to promote that users are informed about roaming tariffs, including via consumer associations;
- that the Commission in co-operation with the national authorities reviews the evolution of roaming tariffs applied by mobile operators by the end of 2001, to establish whether tariff differentiation has been introduced and whether more active competition has emerged, as a consequence of commercial and technical developments observed on the markets.

1 INTRODUCTION

1.1. The Launch of the Sector Inquiry into Mobile Roaming Prices

On 27 July 1999 the Commission decided to open a sector inquiry into mobile roaming. This Decision also started sector inquiries into the pricing and availability of leased lines and unbundled local loop access, because all three sectors had been identified as markets where, in spite of formal liberalisation, competitive prices and pan-European offers did not appear to emerge in practice. For logistical reasons the three inquiries under the competition rules were started successively.³ Following data collection and analysis, the first phase of the leased lines inquiry was finalised with a public hearing in Brussels on 22 September.⁴ Data collection on roaming started in January 2000, and preliminary conclusions are now being drawn, initially at a meeting with the EEA national competition and telecommunications authorities in Brussels on 24 November 2000.

The Commission decision to open an inquiry into mobile roaming charges was based on the fact that no permanent or pan-European roaming offers appeared to be emerging on the market. Instead, the Commission received numerous formal and informal complaints concerning refusals to provide national roaming, as well as complaints about the sale of roaming services across national borders. In addition, the Commission received numerous complaints by individual users and by users' organisations about roaming retail prices. Increasingly, these complaints involved large corporate users that are sophisticated buyers of telecommunications services, which should in principle be able to attract competitively priced offers in markets with a minimum level of effective competition. The concerns involved were highlighted by a 1999 INTUG report that demonstrated how some roaming calls cost up to five times as much as comparable non-roamed calls.⁵

The need to evaluate the effects of industry co-operation based on standard agreements supplied by the GSM Association provided an additional reason to launch the sector inquiry into mobile roaming.

1.2. The GSM Association Notifications

In 1996 the GSM Association notified its Standard International Roaming Agreement (STIRA) to the Commission for clearance from the cartel prohibition under Article 81(3). In addition, in 1998 the GSM Association notified its Inter Operator Tariff (IOT) as the new basis for wholesale roaming agreements between operators. In both cases the GSM Association received a conditional comfort letter from the Commission.

The introduction of the IOT between May 1998 and April 1999 replaced the earlier system of Normal Network Tariffs (NNT). This system was based on domestic retail prices with a mark-up capped at 15%.

This structure meant that the NNTs were subject to a price cap, and were at least potentially subject to indirect competitive pressure due to increasing competition in national retail markets (via the

³ Commission launches first phase of sector inquiry into telecommunications: leased line tariffs. Press Release IP/99/786 - 22.10.1999; Commission launches second phase of telecommunications sector inquiry under the competition rules: mobile roaming, Press Release IP/00/111 - 04.02.2000; Local Loop Sector Inquiry - http://europa.eu.int/comm/competition/antitrust/others/sector_inquiries/local_loop/questionnaire.pdf.

⁴ See Commission Working document on the initial results of the leased lines inquiry, 08.09.00, http://europa.eu.int/comm/competition/antitrust/others/sector_inquiries/leased_lines/working_document_on_initial_results.pdf

⁵ GSM roaming prices compared with international calls, see <http://www.intug.net/surveys/gsm/>

underlying most common retail tariff used as a reference tariff). In practice however, NNTs were raised over time, for example because operators switched from business retail tariffs to residential retail tariffs as their NNT reference tariffs. In addition, the NNTs were mainly used during the period when only one or two mobile network operators were active in most national markets, and retail price competition between GSM operators was relatively limited.

When IOTs were introduced, following a six-month transition period, the price cap was abolished, and the link between wholesale roaming charges and national retail prices cut.

1.3. Pricing Principles of Roaming

1.3.1. Wholesale roaming services

If a subscriber roams on another network and originates a call, the visited network operator bills the home network operator for this call. The underlying charging principles between roaming partners are agreed upon within the GSM Association. Since 1992, when the first roaming agreement was concluded, two systems have been applied:

NNT-based wholesale roaming charges

Before the introduction of the IOT regime, wholesale roaming charges were based on the NNT (Normal Network Tariff). The NNT was defined by the Charging and Accounting Principles of the GSM Association as “the basic standard user tariff as used for standard subscriptions established without any specific conditions or restrictions“. It was the tariff actually used by the major group of subscribers of the network operator using the same services.

Mobile originated calls

Initially, the wholesale roaming charge for an outgoing roamed call (mobile originated calls) was set at the NNT. Later on, mobile network operators placed an additional mark-up on top of the NNT.⁶ The maximum mark-up charged on top of the NNT that was allowed under the Standard International Roaming Agreement was 15%. The 15% maximum mark-up was introduced in 1995 on the basis that this reflected subscription costs, which had hitherto not been taken into account. Almost all network operators set the mark-up at the maximum level, with a few exceptions.

Although the wholesale roaming charge was linked to the retail tariff, and retail tariffs went down during the period the NNT was used, reductions in retail tariffs did not necessarily translate into reductions of wholesale roaming charges. First, the NNT was fixed over a time period and did not immediately respond to reductions of domestic retail tariffs. Second, by switching from a business to a residential user tariff as NNT, network operators were even able to increase the level of wholesale roaming charges.

Mobile terminated calls

The NNT regime did not allow the visited network operator to charge for incoming roamed calls unless the visited network operator charged its own subscribers for mobile terminated calls. Since network operators in the EEA traditionally applied the “calling party pays principle” (and continue to do so), and do not charge their customers for mobile terminated calls, there were generally no wholesale roaming charges put on incoming roamed calls.

⁶ The mark-up was called VPLMN (Visited Public Land Mobile Network) multiplier.

Inter-Operator Tariff (IOT)

The charging principles have been fundamentally revised by the GSM Association. Under the new regime in force since 1998/99, each mobile network operator applies a wholesale tariff to its roaming partners. The IOT is formally defined as a tariff between mobile network operators, charged by the visited network operator to the home network operator for the use of the visited network. The minimum application period of an IOT is 6 months, and changes require a 60 days period of notice. In a number of defined circumstances, however, unscheduled changes may occur at any time: (i) to reduce the IOT, (ii) to cope with regulatory requirements, (iii) to adapt the IOT to changes in network interconnection costs, and (iv) in case of introduction of new services.

Mobile originated calls

Pricing dimensions for outgoing roamed calls (mobile originated calls) are usually:

- (i) destination (domestic/international roamed call),
 - (ii) time of day (peak/off-peak),
 - (iii) time unit (10 seconds/30 seconds/1 minute or other),
- and may also include
- (iv) type of network where the call is terminated (fixed/mobile network) and/or
 - (v) a fixed set-up fee for each call.

For international roamed calls, operators usually use some form of zonal pricing, where a uniform tariff is set for a group of call destinations. While some operators set a uniform IOT for roamed calls to EEA countries or to EU countries, others use more narrowly defined regional zones. A few operators even set a uniform tariff for both roamed calls to EEA countries and domestic roamed calls in the respective time zones (peak or off-peak).

The definition of a time unit and of peak/off-peak time zones may vary from operator to operator. Where operators differentiate between peak and off-peak, the structure chosen is usually influenced by costs and price elasticities of demand and therefore differs. A uniform tariff may be chosen in order to keep transaction costs low and marketing simple. In some cases, uniformity has been achieved by raising off-peak rates to the higher level of peak rates.

Mobile terminated calls

Under the new IOT regime, the restriction where a visited network operator can only charge roaming customers for mobile terminated calls if the visited network operator so charges its own customers no longer applies. Mobile terminated call charges are now part of the wholesale inter-operator charging and are no longer related to the way a visited network operator charges its own subscribers. So far, incoming roamed calls are zero priced, so mobile network operators have not exploited this possibility opened up by the IOT regime.

Discounts on IOT

Network operators may grant individual discounts on the IOT that may differ between roaming partners. Discounts could be based on volume, but also on other criteria such as average expenditure per subscriber, increase in the average expenditure per subscriber, and destination of calls, etc.

There is no evidence in the replies about the extent of discounting that existed under the old NNT regime. Under the new IOT regime, some network operators indicated that they give IOT discounts, but the actual extent remains unclear. The replies give the impression that discounting is only slowly emerging. Some operators have stressed that so far discounts could only be given at the

invoice level and that discounting at the call level necessitates introduction of Transferred Account Procedure 3 (TAP3).

1.3.2. Retail roaming services

Mobile originated calls

The general tariff principle for roamed calls originating in a visited network is the same as for non-roamed calls: the calling party pays the total charges for the calls he/she initiates, whereas the receiving party pays no charge for incoming calls.

The Charging and Accounting Principles of the GSM Association do not formally restrict operators in pricing of retail roaming services, and each operator keeps his freedom to set the level of his end-user tariffs without restriction. However, the tariff principles that have evolved over time are remarkably similar: the home network operator usually adds a handling charge of 10 to 35 % to the wholesale roaming price charged by the operator of the visited network. As a result, the structure of the visited network operator's IOT also determines the structure of the home network operator's retail roaming tariffs.

In case of tied or independent service providers, the roamed calls are billed to the relevant home network operator by the visited network operator. The home network operator adds the handling charge before billing the roamed calls to the service provider along with the other calls made by the service provider's customers. The home network and the service provider share the handling charge. The two countries with the highest mark-ups (UK and Germany) are those where independent service providers play an important role. It appears that the involvement of service providers in those countries inflates the level of retail roaming rates rather than providing incentives for a decrease through stimulating more competition.

Apart from a few exceptions, retail customers usually pay the same rate for roaming calls regardless of the pricing plan they are on. This differs from calls made in the home country, where there are wide variations in call charges dependent on the tariff the customer is connected to. In addition to the published tariff list, there may also be unpublished discounts for large corporate customers. The extent of secret discounting, however, could not be established on the basis of the replies to the sector inquiry.

Recently, a number of operators have started to offer averaged retail roaming prices. A few mobile operators set a single retail roaming price for roaming services in a particular country and do not differentiate between alternative visited networks. Other mobile operators have introduced so-called "flat rate" or "one rate" charges for home calls, that is, uniform rates for home calls from other Euro zone, EU or EEA countries.

Mobile terminated calls

The general tariff principle for roamed calls terminating in a visited network is different from the one for non-roamed calls: the calling party - who may not be aware that the called party has roamed away - does not pay the total charges for the calls he/she initiates, and the receiving party pays a charge for incoming calls. When calling a subscriber that has roamed away from his/her home network, the calling party pays the standard rate applicable for calling the mobile subscriber in his/her home country. The call re-routing part from the subscriber's nominal address to his actual address is charged to the called party.⁷

⁷ Similarly, in case of forwarded or deflected calls, the forwarded part of a call is treated and charged as if it were a separate mobile originated call initiated by the forwarding or deflecting subscriber.

1.4. Technical Aspects and Types of Roaming

1.4.1 Types of roaming

Whenever a subscriber uses his/her handset on a network in another country, the term “international roaming“ is used. “National roaming“ describes the case where a subscriber roams on another network in the same country as where he/she has his/her subscription.

Although the paragraphs below provide a brief description of both international and national roaming, this working document does not deal with national roaming. Both the preliminary findings as well as the legal analysis and the proposed remedies that follow concern two types of international roaming: **international calls** to persons in other EEA countries made while roaming abroad, and **domestic calls** made while roaming abroad, i.e. calls made to persons in the country of the visited network (as to the scope and definition of those two categories, please see 1.4.2. (ii)).

International roaming

International roaming agreements are concluded on a bilateral basis between individual licensed mobile network operators that are members of the GSM Association, the industry body responsible for the development, deployment, evolution and promotion of the GSM standard. International roaming agreements between GSM operators are usually (but not necessarily) reciprocal, that is, both roaming partners reciprocally purchase wholesale roaming services. They are based on a common framework agreed upon within the GSM Association: the GSM Memorandum of Understanding (MoU), the GSM Association’s STIRA, and the IOT (previously NNT) Agreement.

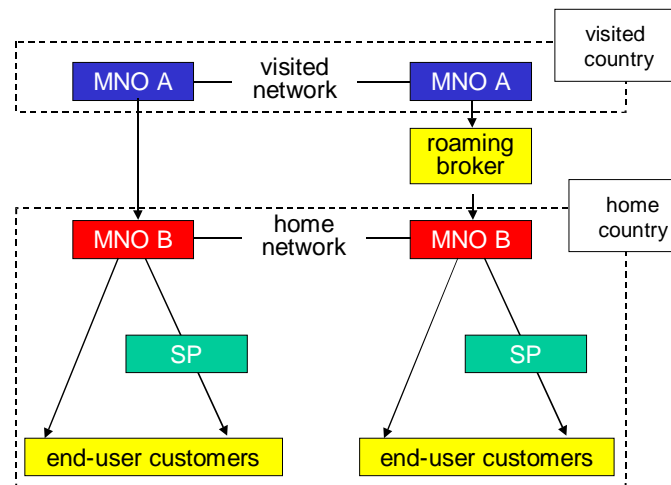
This framework provided by the GSM Association does not deal with international roaming agreements between mobile network operators and organisations that are not licensed mobile network operators (such as service providers, virtual mobile operators, or fixed network operators), and so far there are no such international roaming agreements in place. The mobile network operator in the home country acts as a reseller of wholesale roaming services purchased from other mobile network operators.

Figure 1 gives an illustration of the vertical relationships between mobile network operators, roaming brokers and service providers involved in the provision of international roaming. Assume that A denotes a customer’s visited network and B his/her home network. Basically, there are two alternatives to distinguish:

- There is an international roaming agreement in place between mobile network operators A and B, and B directly purchases wholesale roaming services from A. B may provide retail roaming services to customers via an internal sales unit, or B may resell the wholesale roaming services purchased from A to a service provider as part of the service provider agreement. So far, there are no examples of roaming agreements between a mobile operator and a service provider (or a service provider turned into a mobile virtual network operator).
- B has no international roaming agreement with A, but uses a roaming broker such as Comfone, Mach (Magellan roaming platform) or Dan Net (Roameo roaming platform). A roaming broker is an entity that enables customers to roam on other mobile networks where the mobile networks have no direct contractual relationship with the customer’s home network. This is made possible through contracts between the roaming broker and the mobile networks. As depicted in Figure 1, the roaming broker buys wholesale roaming services from A (and other mobile network operators) and resells them to B. As before, B may directly sell retail roaming services to customers, or use a service provider. So far, there are no examples of direct relationships

between roaming brokers and service providers (or service providers turned into mobile virtual network operators).

Figure1: International roaming



International roaming and preferred roaming status

Roaming agreements may include an obligation to give the roaming partner preferred roaming status. In that case, the mobile network operator will programme its SIM cards in such a way so as to direct its customers to the preferred roaming partner’s network once they enter its coverage area. Customers will automatically end up with the preferred roaming partner unless they choose to manually select another network operator. A preferred roaming status is often agreed upon reciprocally, but unilateral obligations also exist, in particular if incumbent operators require this as a condition for concluding a roaming agreement with a new entrant.

National roaming

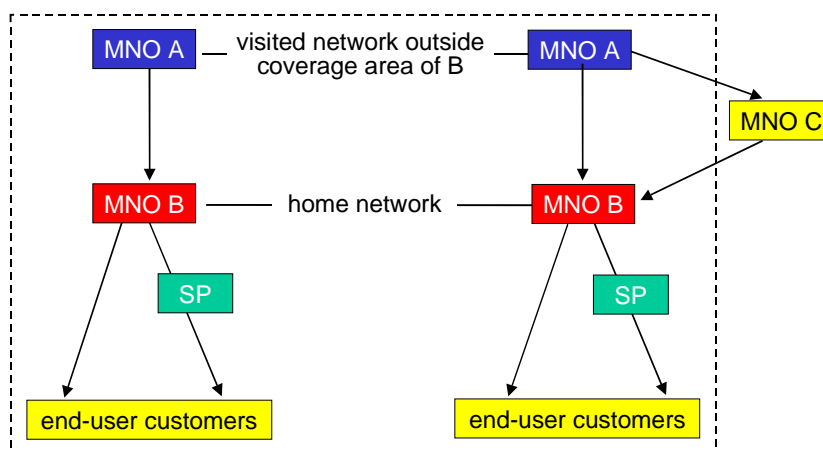
In contrast to current international roaming, national roaming is not based on reciprocal relationships between network operators. Rather, it is a way for new mobile network operators during the network rollout phase to increase coverage by buying national roaming services from incumbent mobile network operators. National roaming is usually based on mandatory national roaming obligations which have been imposed by statute and/or licence conditions upon incumbent mobile network operators to promote entry by new mobile operators and therefore are limited in time, i.e., during network rollout phase. In a few cases, incumbent mobile network operators also provide national roaming to new entrants for commercial reasons. The EU promotes national roaming in the context of the introduction of UMTS, and most Member States oblige incumbent GSM/UMTS mobile network operators to provide national roaming on GSM networks to newcomers (UMTS licence holders without GSM networks) during a transitional phase.

In various instances, service providers have also tried to negotiate agreements that could be described as national roaming agreements in order to become mobile virtual network operators (MVNOs). To date, only in Denmark, Ireland and Sweden does national telecommunications legislation oblige mobile network operators to provide access to unbundled network elements.

Figure 2 illustrates the vertical relationships involved in national roaming. Assume that B denotes the customer’s home network. A is the network that a customer can roam onto outside B’s coverage area. Again, there are two alternatives to distinguish:

A provides national roaming to B as a result of a regulatory obligation or for commercial reasons. B, therefore, may directly purchase wholesale roaming services from A. B itself may provide retail roaming services to customers via an internal sales unit, or B may resell the wholesale roaming services purchased from A to a service provider as part of a service provider agreement. B relies on another mobile network operator C to ensure access to A's network and thereby give its customers coverage in areas where its network has not yet been rolled out. C has an international roaming agreement with A and resells wholesale roaming services purchased from A to B. In fact, network A identifies customers of B that roam on its network as customers of C.

Figure 2: National roaming



1.4.2. Types of roamed calls

There are various types of roamed calls analysed in the report. The types of calls - also summarised in Figure 3 - are explained as follows:

(i) *Outgoing vs. incoming roamed calls:*

An outgoing roamed call is a call made by a subscriber when roaming on a visited network (also termed *mobile originated roamed call*).

An incoming roamed call is a call received by a subscriber when roaming on a visited network (also termed *mobile terminated roamed call*).

(ii) *International and domestic roamed calls:*

An **international roamed call** is a call made by a subscriber roaming on a visited network to someone in another country. The called person may be a subscriber on the same home mobile network as the calling person, a roaming subscriber of a visited mobile network, or a fixed network subscriber.

A **domestic roamed call** is a call made by a subscriber roaming on a visited network to another person in the country of the visited network. The called person may be a mobile subscriber of the visited network, another roaming subscriber on the visited network, a mobile subscriber on another licensed mobile network in the same country, or a fixed network subscriber in the same county.

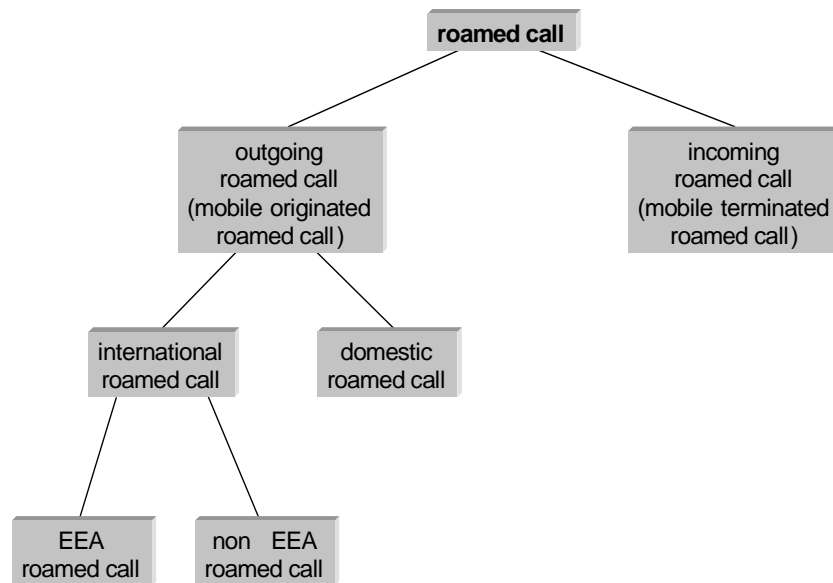
(iii) *Roamed calls to EEA countries vs. roamed calls to non EEA countries:*

Our empirical analysis focuses on roaming in the EEA, that is, on domestic roamed calls in EEA countries, and on international roamed calls to other EEA countries.

A *roamed call to an EEA country* (also named *EEA roamed call*) is a call made by a subscriber roaming on a visited network in an EEA country to a subscriber in another EEA country.

A domestic roamed call in an EEA country is a call made by a subscriber roaming on a visited network in an EEA country to a subscriber (domestic or foreign) in the same country.

Figure 3: Types of roamed calls



Further explanations of the technical aspects of roaming can be found in Appendix II - Technical Aspects of Roaming.

2. PRELIMINARY FINDINGS

Given the confidential nature of the information collected, and the need to further verify the reliability of this information, the following findings must be considered as preliminary and without prejudice to further assessment on the basis of additional information or comments which could be obtained.

2.1. Market definitions

The analysis of the data collected is based on Articles 81 and 82 of the EC Treaty. This analysis starts with defining the relevant markets.

Wholesale product markets

Roaming can be defined as

“Facility, supported by commercial arrangements between operators and/or service providers, which enables a subscriber to use his/her radio telephone equipment on any other network which has entered into a roaming agreement in the same or another country for both outgoing and incoming calls.”⁸

Three possible separate wholesale markets were examined⁹:

1. the market for the provision of wholesale roaming to foreign mobile network operators;
2. the market for the provision of national roaming to mobile network operators within the same Member State (usually based on regulatory incentives);
3. the market for the provision of wholesale airtime to national service providers (which can include tied SPs, independent SPs, or both).

The first market - the market for the provision of wholesale roaming to foreign mobile network operators – is relevant for the purposes of the sector inquiry. Wholesale roaming satisfies primarily a demand by foreign mobile network operators whose main objective is to enable them to offer their own subscribers a seamless service, not limited to the territory in which they have their own physical network. On the other hand, there is a demand from users to be able to use mobile phones outside their home countries without having to acquire a new SIM card, or enter into another subscription, enabling them to keep the number they use on their home network.

National roaming to mobile network operators within the same Member State (usually based on regulatory incentives) appear to be distinct from international roaming for the following reasons. Firstly, because national roaming arises in most cases from a temporary regulatory obligation¹⁰ imposed on existing mobile network operators to provide roaming to subscribers of a new entrant network operator, outside of the new entrant’s coverage area. Secondly, because tariffs applied for such roaming appear to be lower than IOTs applied to foreign operators. Thirdly, because national roaming agreements are not based on the charging arrangements which were developed within the GSM Association.

8 Green Paper on a Common Approach in the Field of Mobile and Personal Communications in the EU, COM (94)145 final, p.225.

9 In addition more advanced roaming markets there may well be emerging, e.g. for WAP-roaming. See Case COMP/JV.48 Vodafone / Vivendi / Canal+, Commission Decision of 22.07.00.

10 Finland is an exception because of some remote areas that justify national roaming not limited in time.

Airtime provision, indirect access through carrier selection (i.e. call origination) or pre-selection would not form part of this market because in the current state of technology and commercial reality none of these forms of services are substitutes for international roaming provided by mobile operators. If the foreign operator enters into a wholesale airtime agreement with an operator in the territory which its customers were visiting, that would entail the foreign operator's subscriber having to acquire a new SIM card issued by the visited operator's network. Each customer would also have a new number for that territory, which would be part of the national numbering plan of the visited territory, and each customer would have to enter into a new subscription agreement. Indirect access (call origination) is also not possible without a new SIM card issued by that visited network operator and a new number in the national numbering plan of the visited territory. Finally, for the time being, mobile network operators sell wholesale roaming services to other licensed mobile network operators only. They do not conclude agreements with service providers of other countries. The subscribers of the latter have access to roaming via the agreement with a national mobile operator of their home country, from which the service provider is reselling the service.

For all three of these product markets the geographic scope of the markets involved appears to be national, because only nationally licensed operators can at present compete to provide the roaming services involved.¹¹

Retail product markets

The next question examined is whether there exists a market for retail roaming services distinct from the market for retail domestic mobile services. Following the investigation, this appears to be the case for the following reasons:

- subscribers take separate decisions regarding the use of roaming services, according to many tariff schemes, implying sometimes the need to request specially the operator to enable international roaming, possibly by giving a further credit guarantee;
- the factors influencing the use of roaming services are different from those influencing the use of national mobile services. To a limited extent (corporate) calling cards, call-back, international prepaid cards and hotel phones are partial substitutes to retail roaming;
- some service providers are offering to the business community specific subscriptions for international roaming implying generally the use of a SIM card of an operator of a country different from that of the relevant company;
- unbundled roaming offers have been brought into existence, whereby a (normally business) user can purchase roaming services separately from the general domestic mobile services from a different supplier (Mint Telecommunications¹²).

In any case, these possible competing services also differ strongly from Member State to Member State (e.g. specific prepaid card offers for foreign tourists exist in Spain and Italy but not in other Member States). Consequently, the relevant geographical market in this case is likely to remain predominantly national. In the medium term, a market for the provision of advanced pan-European mobile telecommunications services to internationally mobile customers/large corporate accounts will emerge.¹³ In this case the relevant geographical market is likely to be pan-European. However, it is likely that a more general market for retail roaming services will also continue to exist alongside this market, which will continue to be national in character for some time.

11 See e.g. Case IV/M.1430 Vodafone / Airtouch, Commission Decision of 21.05.1999.

12 See <http://www.mint-tele.com>.

13 See Case COMP/M.1795 Vodafone / Mannesmann, Commission Decision of 12.04.2000.

If the existence of a retail roaming market distinct from the domestic mobile services market could not be confirmed for specific national markets, this would nevertheless not affect the analysis below.

2.2. Market Size and Structure

2.2.1. Market size

The total market size of the EEA wholesale roaming market was estimated at some €2.400 million in 1999. The total size of the EEA retail roaming market was estimated at €3.300 million in 1999.

The growing importance of roaming revenues results not only from IOT revenues due to the increased usage of mobile networks by visiting customers, but also from the billing of calls made in foreign countries by own clients. As a matter of fact, the ratio of inbound roaming to outbound roaming (in other words, the ratio of wholesale roaming minutes to retail roaming minutes) varies to a significant extent. Based on the limited information available, the ratio of inbound to outbound roaming does not seem to be correlated to the date of entry into the market of the respective operator. However, it is to be taken into account when assessing the importance of roaming revenue for each of the mobile operators. Revenue from wholesale and retail roaming services can be as high as 35,7 % of total revenue and amounts up to between 10% and 25% of the total revenue for selected mobile operators.

2.2.2. Wholesale market structure

Supply side

The main finding regarding the wholesale markets is that very high concentration ratios were found to exist in most national markets which cannot be explained only by the limited number of licences granted. Typically the two largest providers of wholesale roaming services in a given country have a combined market share of over 95%. According to the replies received, this finding can be explained by the first-mover advantages that work in favour of the incumbent GSM 900 network operators, who started operating several years before the DCS 1800 licensees, and the time necessary for the take up of dual-band handsets. New DCS 1800 operators appear to have difficulties attracting significant roaming traffic, even in the Member States where they offer lower IOT rates than the GSM operators.

A new feature is the additional source of supply resulting from emerging roaming brokerage. Given that those 'brokers' resell roaming minutes, this does not result in lower roaming tariffs. The bulk savings through aggregation are mostly offset by brokerage fees and revenue sharing arrangements. Thus, although they could be perceived as alternative suppliers of roaming access, they are most probably not able to exert any influence on roaming prices.

In addition to the increasing number of flat rate tariffs (some already on the market and some claimed to be under development), there are wholesale call-back solutions as well as retail offers such as the SIM-based solution of Mint Telecom. The latter offers a flat rate retail tariff to customers who use the Mint SIM while roaming. There are also services which select least-cost networks when roaming and other call-back solutions such as SELEX's call-back via SMS messaging.

Demand side

Access to wholesale roaming rights so far appears to be limited exclusively to licensed public mobile network operators. No cases have been found where service providers have a title to wholesale roaming rights on their own account.

Consequently the wholesale roaming market is a mature market in the EEA. The number of suppliers and buyers of wholesale mobile roaming will not increase in the near future (before the new generation of mobile operators - UMTS - becomes operational).

2.2.3. Retail market structure

Supply side

At retail level, tied and independent service providers also offer retail roaming – generally as part of a bundle of mobile services – but they cannot make truly competitive offers because they are wholly dependent on the conditions given by the mobile network operators. As a matter of fact, they simply share the mark-up on the IOT with the home operator. In this regard, one of the findings of the inquiry is that the mark-up is the highest in countries where independent service providers are active.

In national retail markets, the concentration ratios for the combined roaming retail market share of the two largest providers appear to be lower than for wholesale roaming, but are still between 60% and 100%.

Demand side

Consumers generally consider themselves poorly informed about the conditions for roaming and argue that retail prices are too complex and lack transparency. Given this perceived lack of transparency and limited access to accurate price information, the possibility for consumers to manually override roaming network selection (either pre-programmed by the home operator or determined by field-strength) is of negligible significance in controlling roaming retail prices. Remote (over the air) updating of preferential roaming lists and call-back although, gradually emerging as alternatives, were not yet found to be much in use.

2.2.4. Wholesale roaming prices development 1997 - 2000.

Mobile operators have no incentive to offer lower wholesale rates because their counterparts, to date, cannot guarantee traffic re-direction to their networks. This inability to direct traffic to the cheapest of several parallel networks in a visited country makes it difficult for the home operator to realise the type of price-volume trade-offs that could lead the visited countries' operators to cut their IOTs in order to benefit from attracting additional traffic.

In addition, there appears to be a general lack of incentives for wholesale price competition due to an almost complete absence of price competition at retail level resulting from the referred to lack of transparency of retail roaming prices and uniform mark-ups applied on the IOTs in certain Member States. The data collected during the inquiry confirms these characteristics of the wholesale market.

When IOTs were introduced, following an initial six-months' transition period, the price cap remaining from the NNT regime was abolished, and the link between wholesale roaming charges and national retail prices cut. Although in theory this should have increased the freedom of mobile network operators to compete directly on wholesale roaming rates, there is no evidence that such competition has emerged. On the contrary, a comparison between the last NNT-based charges and those under IOT in Q4 2000 shows increases of up to 212% for international roamed calls to EEA countries (at peak time) and up to 294% for domestic roamed calls (at off-peak). The data collected clearly demonstrate that substantial increases still took place for certain operators after the IOT regime was put in place.

Taking into account the market structure as described above, the inquiry shows that in most cases prices have increased, often significantly. Over the 1997-2000 period mobile operators in many cases have raised their wholesale rates for international roamed calls at peak and off-peak times by up to 126%. For wholesale domestic roamed calls during the same time period, the prices of more than two-thirds of the operators involved have gone up, and by as much as between 166% (calls at peak time) and 227% (calls at off-peak time). Those wholesale price increases, due to the pricing structure of roaming, translate into increases in retail roaming prices. As retail rates for non-roamed mobile calls have generally dropped during this period, the relative price increases in roaming charges are even higher than these absolute price increases. Clearly, the introduction of the IOT so far has not increased -- but may instead have decreased -- wholesale roaming price competition.

The following pricing trends in wholesale roaming prices in the period 1997-2000 have been observed¹⁴:

- National wholesale roaming markets are characterised by considerable differences in price levels between Member States. In most countries mobile network operators have set their wholesale roaming prices significantly above the best practice level. For roamed calls to other EEA countries, 9 mobile network operators have IOTs twice as high or higher than the best practice (peak or off-peak IOTs or both). The wholesale prices of the domestic roamed calls appear to be at least twice as high as or higher than the benchmark for 29 mobile operators (peak or off-peak IOTs or both).
- The introduction of the IOT regime in 1998/1999 has cut the link with the price of non-roamed retail calls, thus making wholesale roaming prices resistant against the competitive pressure that could have come from the reduction of prices in non-roamed calls Europe-wide. Consequently, most of the network operators have increased their IOTs, thus increasing the retail roaming prices, while at the same time prices of national mobile calls have dropped substantially. Although the lack of price information did not allow a comprehensive price comparison for all network operators, the available information for 1999 shows that in many cases IOTs are set substantially above retail prices for non-roamed calls.
- For roamed calls to EEA countries, there is a strong correlation between the level of IOTs in 1997 and the rate of change of IOTs between 1997 and 2000, demonstrating clear convergence towards a higher overall level of IOTs. Many mobile operators that initially had relatively low IOTs have significantly increased their IOTs, while many operators with initially high IOTs have decreased their IOTs. Some of those price convergences took place following the launch of the Commission's sector inquiry into mobile roaming prices.

¹⁴ To identify possible excessive pricing, the level and development of wholesale roaming charges have been examined, using the following three approaches:

- (i) Cross country comparison: IOT's of all operators have been compared to the average of the IOT rates of 5 mobile operators (with rolled-out networks) with the lowest IOTs;
- (ii) Comparison with prices of non-roamed calls within the same country: the price of a non-roamed wholesale call charged to domestic service providers (also called "wholesale airtime price") is a suitable comparator for a wholesale roaming charge provided that it reflects effective competition on the wholesale and retail level and it is adjusted for any cost differences between roamed and non-roamed calls.
- (iii) Analysis of pattern of changes of wholesale roaming charges: The development of wholesale roaming charges over a four year period was traced and the pattern of changes was identified.

The analysis of retail roaming rates follows similar lines. Because information on retail roaming rates was not generally available, the report focuses on an examination of pricing principles applied by mobile network operators when setting rates.

- (i) Cross country comparison: Indirectly calculated by adding the lowest mark-ups applied in the EEA to best practice for wholesale roaming charges. This is consistent with the traditional approach of mobile network operators of marking up wholesale roaming charges to set retail roaming prices.

Most operators charge for EEA roamed calls a higher IOT than for domestic roamed calls. A few operators set a uniform tariff for EEA and domestic roamed calls in the respective time zone (peak or off-peak). Surprisingly, a few operators use an inverse pricing structure, where IOTs for domestic roamed calls are in fact higher than IOTs for international roamed calls.

3. ANALYSIS UNDER ARTICLE 81

Findings relating to wholesale markets

The inquiry showed that in a number of Member States a group of operators apply the same or very similar per minute IOTs in respect of roamed calls on their networks:

- a) as regards international calls to other EEA countries
 - at peak times (France, Germany, Spain)
 - at off-peak times (Denmark, France, Spain, the United Kingdom)
- b) as regards domestic calls within the visited country
 - at peak times (France, Germany, Spain, Sweden)
 - at off-peak times (France, Germany, Sweden)

In addition, some of the operators in those countries appear to apply very similar rates even on a de-averaged basis towards operators of a large number of Member States, and those rates are currently the highest in the EEA of all the non-uniform rates.

Comparable similarities are not found in other countries.

Oligopolistic nature of the market

Given the limited number of mobile licensed operators and the fact that the cost structures, at least for GSM 900 network operators with full coverage, are symmetrical, the market can be conducive to parallel behaviour by the oligopolists. The fact that the product offered (roaming services) is homogeneous, and that the market is characterised by a rather low price elasticity of demand (foreign mobile operators need roaming agreements to offer the service to their clients) while being transparent in terms of price to those seeking wholesale roaming agreements with operators in a particular country further reinforces the high oligopolistic interdependence in the market.

One explanation which is sometime offered for parallel pricing practices in general is that in such oligopolistic markets where there is a small number of participants, the market is transparent, and the product or service is homogenous, there is a clear incentive for undertakings to align their prices. This can be done in different forms and by pursuing different strategies of co-ordinated behaviour. In the prevailing situation, where we are faced with (i) an oligopolistic market structure, (ii) products which are close substitutes, (iii) a rather (price) inelastic market demand, (iv) similar cost structures of suppliers, and (v) high barriers to market entry, economic theory presumes that there is a significant incentive for the oligopolists to agree on a strategy by which each undertaking would follow the prices adopted by a market leader. Such behaviour, contrary to a dominant firm or barometric price leadership, would be referred to as collusive price leadership.

Collusion

A high degree of oligopolistic interdependence cannot, by itself, fully explain the similarities in prices shown by the inquiry, neither the convergence of tariffs across the EU noticed since the opening of the sector inquiry.

There are a number of countries in which inexplicable similarities occur, but which may not be objectionable under Article 81. In particular, there were cases where the second and third largest suppliers of wholesale roaming in a particular Member State applied similar IOT rates, but where

the largest operator's rates were significantly higher or where the largest operator may have had an identical IOT as that applied by another operator, but only in respect of that operator's rates for termination on mobile networks, its rate for termination on fixed networks being lower.

Clearly, unless concertation is the most plausible explanation for this parallel conduct, it would be difficult to prove an infringement of Article 81. However, it does not appear that the similarities in price in some cases could be explained by any legitimate market conduct and/or market factors. In particular, this pricing behaviour is not likely to be explained in all cases by the oligopolistic nature of the market in question.

Sharing of confidential information directly between competitors

If the similar prices highlighted above result from the sharing of confidential information between national competitors, then the mere sharing of such information could be an infringement of Article 81. This applies even if prices are not the same or similar. The GSM Association STIRA, which is meant to be the basis of all international roaming agreements, requires that the parties to it must keep information contained in the agreement confidential and must only disclose it on a need to know basis either within their company, or to their agents or professional advisers on the same basis. Further, allegedly the GSM Association Infocentre, to which IOT's are uploaded for access by operators from other States, does not enable mobile operators from one State to have direct access to the IOTs offered by other mobile operators from that State. However, operators could in many cases find out about the wholesale rates offered by their competing national operators through their foreign subsidiaries having access to the GSM Association Infocentre, and relaying the information to them. Alternatively, such information could be obtained through foreign operators with whom the relevant operator is negotiating a roaming agreement informing the operator of IOTs of its competitors posted on the GSM Association Infocentre.

It might also be possible that operators find out this information directly by applying assumptions or knowledge about foreign operators' mark-ups on wholesale roaming rates (see below) and deducting the mark-ups from the published retail roaming rates of foreign operators. In fact, the latter method would be fairly unreliable, because accurate information about current retail roaming rates is very difficult to obtain in many cases, and operators often only publish indicative rates sporadically, which are not guaranteed to be valid. It would not explain the other phenomenon, whereby operators will sometimes both adjust their IOTs upwards by a similar amount. Operators will therefore have to explain how exactly it is that they have acquired information about their competitors' IOTs, in a way that does not infringe competition law.

Collusive behaviour in retail markets

In charging their own customers for roaming, operators in certain Member States apply mark-ups on their wholesale roaming costs (the visited network operator's IOT) of between 10 and 35%. These same rates are applied by all, at least by the majority of operators in a given market. This happens in Austria, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, and the United Kingdom.

The wholesale (as opposed to retail) roaming charges made by an operator in a particular visited country to all operators in any particular home country are the same undiscounted IOT rate in all but a very small number of cases.

Consequently, the application of the same mark-ups on IOTs in respect of retail charges as described above results in prices charged to customers per minute for roaming being the same (for

those operators which apply the same mark-ups) for roaming on a particular network of any visited country.

This lack of price competition in retail roaming charges contrasts with a considerable variation in the price of non-roamed calls within, or from the home Member State.

The results of the inquiry suggested that it was often extremely difficult for subscribers to find out with accuracy the roaming rates applicable at any particular time, suggesting that competition in the retail roaming market was very weak.

Unless operators can demonstrate a plausible explanation of the similarities in mark-ups over wholesale rates indicated above, such similarities may be considered as resulting from the oligopolistic structure of the retail roaming markets only.

Effect on trade between Member States

The conclusion of an international roaming agreement will lead to a visited network performing a service for a home network in another state against payment. The home network subscribers do not have to enter into a contractual relationship with the network operators in the visited countries. It is the home network who makes this service available to its subscribers in the country of the visited network, on the basis of the roaming agreements concluded with the relevant operators or, more recently – roaming brokers. The international roaming agreements which are concluded between a home network and a visited network which both operate in the EU/EEA either directly or indirectly, thus relate to the provision of cross-border services and will by definition affect trade between Member States.

4. POSSIBLE EXCESSIVE PRICING – ANALYSIS UNDER ARTICLE 82¹⁵

4.1 Individual dominance

The inquiry showed that in a large number of Member States, there were operators with more than 50% of the national wholesale roaming markets. Very large market shares can in themselves be evidence of the existence of a dominant position, unless there are exceptional circumstances in the market¹⁶. However, factors other than the size of the market share have to be taken into account. Factors, which are generally relevant, include:

- the comparative market share of competitors
- the rise or decline in market share over time
- ability to price significantly more than competing operators (or at least significantly more than competing operators with GSM 900 networks)

The inquiry results suggest that there might be operators with an estimated market share of over 50% in Austria, Belgium, Denmark, France, Germany, Iceland, Italy, the Netherlands, Norway, Spain, and the United Kingdom.

However, there has been a strong movement in market share in a number of Member States resulting in the fact that the second entrant acquired the highest market share for wholesale roaming. Where the operator with the largest share of the wholesale roaming market is not the first GSM operator in a particular territory, this will tend to negate a finding of individual dominance.

As regards the ability to price significantly above competitors, the inquiry shows that in Austria, Belgium, Denmark, Iceland, Italy, the Netherlands, and Norway the relevant potentially dominant operators applied higher IOTs than their competitors in the market.

It is difficult to establish dominance in the framework of this general sector inquiry. All specific characteristics of the relevant national markets would need to be assessed on a case by case basis.

4.2. Joint dominance

The inquiry showed high concentration ratios with a combined market share of above 90% for the two initial GSM 900 operators in most national wholesale roaming markets.

4.2.1 Existence of a Collective Entity

According to the Court of Justice, a collective dominant position can be held by two or more economic entities¹⁷, legally independent of each other, provided that from an economic point of view they present themselves or act together on a particular market as a collective entity vis-à-vis their competitors, their trading partners and consumers. In order to establish that such a collective

¹⁵ Article 82 of the Treaty prohibits the conduct of one or more economic operators undertakings consisting in the abuse of a position of economic strength which enables the operator(s) concerned to hinder the maintenance of effective competition on the relevant market by allowing it to behave to an appreciable extent independently of its competitors, its customers and, ultimately, consumers.

¹⁶ Case C-62/86 AKZO Chemie BV v EC Commission [1991] ECR I-461.

¹⁷ Joined Cases C-395/96 P and C-396/96 P Compagnie Maritime Belge, 16 March 2000 not yet published, (para. 36).

entity holds a dominant position, it is necessary to examine the economic links or “other factors” which give rise to a connection between the undertakings concerned.¹⁸

4.2.1.1 Economic links, multi-market contacts, market transparency, no competitive fringe

A number of economic links exist between mobile operators in a particular Member State, including not only interconnection agreements, but more importantly the strong links which exist through membership of the GSM Association, through which they have brought about the adoption of common standards and methods of operating, policies and accounting procedures, and in particular the adoption of standard agreements for roaming and roaming charges within the GSM Association in the form of the STIRA and the IOT charging arrangements. Mobile network operator licenses contain identical obligations and, in certain Member States, mobile operators are required to co-operate intensively in order to implement requirements such as number portability. For this reason, mobile operators are often also members of other national groups or committees where they act together. The majority of mobile operators are also members of other kinds of industry related forums such as the WAP forum or the UMTS forum. Finally, they are all linked directly or indirectly to each other via interconnection agreements, which could be considered to be a strong economic link as noted in the Commission Notice on the application of the Competition Rules to access agreements in the telecommunications sector (point 79)¹⁹.

It is also relevant that in the wholesale roaming market, nearly all transactions are concluded on the basis of the STIRA and IOT charging arrangements, which were developed within the GSM Association. In this framework - interpreting restrictively the non-discrimination clause included - each operator is applying the same terms and conditions in its international roaming agreements to provide roaming to its network

In any case, according to the Court of Justice, the existence of an agreement or of other links is not indispensable to a finding of a collective dominant position. In fact such a finding may be based on other connecting factors and will depend on an economic assessment and in particular on an assessment of the structure of the relevant market.

4.2.1.2 Connecting factors relating to the structure of the market, high entry barriers

The wholesale roaming market is unusual in that operators outside of a particular Member State tend to conclude international roaming agreements with all or most of the operators within that Member State. This is to ensure the best possible service to their own customers.

In practice, customers often make no economic differentiation between networks and do not often make use of their ability to manually switch between networks, often due to a lack of information about the tariffs applicable at any particular time from the roamed networks, and sometimes due to the fact that they may not be able to choose a particular network consistently for reasons of coverage, or other technical reasons. On the other hand, for the time being the home network operators in turn cannot re-direct traffic from one visited network to another, and cannot ensure that the end-users remain on the preferred visited network. Therefore, it could be argued that due to the technical design and functioning of roaming all mobile networks in a visited country are often perceived as a collective entity by both the home network operator and the end-user.

¹⁸ Case C-393/92, *Almelo*, [1994] ECR I-1477, par.43 and Joined Cases C-68/94 and C-30/95, *France and Others v Commission* [1998] ECR I-1375, para. 221.

¹⁹ See footnote 2 above.

In that sense it could be argued that the need to ensure seamless communications links in the visiting network gives rise to a “connection” between the Mobile operators in a given country within the meaning of the case law of the Court of Justice.

The wholesale roaming market is also unusual in that entry into the mobile market is limited to licensed undertakings. Spectrum scarcity implies that only a handful of operators can be licensed. The absence therefore of potential competition from possible new entrants limits competition among existing license holders.

4.2.2 Existence of a dominant position held by the collective entity

The combined market share of above 90% for the two GSM 900 operators cannot be explained only by later licensing of GSM 1800 networks and later emergence of dual mode handsets. The relatively high rates of growth and of technological change in mobile markets would not in themselves rule out the existence of joint dominance, since they have not appeared to have significantly affected the structure of the relevant markets, and appear unlikely to do so in the medium term. As indicated above, there are high entry barriers to the market in general, entry to the wholesale roaming market being restricted to licensed network operators and investment is higher for GSM 1800 network operators to reach comparable coverage.

However, such assessment of dominance should not be static. It requires an examination on how the market shares have varied over time, as well as how the factors influencing possible dominance, such as coverage and technology are likely to vary over time.

4.3. Excessive tariffs

The application of excessive tariffs by an individually dominant operator or a jointly dominant operator will be an abuse of that dominant position²⁰.

An excessive price has been defined by the ECJ as being 'excessive in relation to the economic value of the service provided'²¹. The assessment thus involves a comparison of the price with the underlying cost. The replies to the sector inquiry on the question of the underlying costs of international roaming differ significantly. Alternative methods could be used to assess whether a price is excessive. In this case, cross-country comparison as set out in the text has been used to identify possible cases of excessive prices²².

Possible excessive wholesale roaming rates

a) international roamed calls to other countries

A number of mobile operators set a uniform IOT for peak and off-peak calls while others differentiate the IOT between peak and off-peak. In case of a tariff that differentiates between peak and off-peak, the average of the 5 cheapest off-peak prices of operators with rolled-out networks would lie at 0.34 Euro/minute, while the average for peak price would be 0.51 Euro/minute. In case of a uniform tariff, the average suggests a price of 0.45 Euro/minute, but since this is above the top average for a differentiated tariff, which should not be the case, it was adjusted down to lie between the averages for differentiated tariffs, at 0.46 Euro/minute. Operators in the following Member States had rates which were more than 100% above the averages of the 5 cheapest, which is an

²⁰ Case T-228/97, *Irish Sugar plc v EC Commission* [1999] E.C.R II-2975

²¹ Case 26/75 *General Motors Continental v Commission* [1975] ECR 1367 at para 12

²² Please see footnote 14 above.

indication that they are likely to be excessive: Belgium, the Netherlands, Norway, and United Kingdom.

b) domestic roamed calls

In case of a tariff that differentiates between peak and off-peak, the average of the five cheapest operators with rolled-out networks off-peak price lies at 0.29 Euro/minute, while the average peak price would be 0.15 Euro/minute. In case of a uniform tariff, the average of the five cheapest produced by the above method is 0.25 Euro/minute.

Compared to these averages, operators in the following Member States had rates which were more than 100% above the benchmark: Austria, Belgium, Denmark, France, Germany, The Netherlands, Norway, Spain, and Sweden (peak and off-peak rates).

Further assessment

A cross-country comparison might not be sufficient to establish excessive pricing. Therefore a further test was applied.

An appropriate comparison can be made with the price of a comparable non-roamed wholesale call charged to domestic service providers (also called “wholesale airtime price”), provided that (i) it has been set under effective competition and (ii) costs do not differ.

The results of this approach largely confirm the results of the cross-country comparison.

5. REGULATORY ISSUES

Some operators mentioned their fear that discounting - even if it would be pro-competitive - could be considered infringing non-discrimination obligations imposed in their licenses, where they cannot provide cost justification but only justification based on possible future revenue effects of such offers.

Such non-discrimination obligations would delay downward trends as far as they could hamper the application of discount schemes not strictly related to cost-savings.

Similar fears were expressed as regards the compatibility with such clauses of:

- preferential roaming agreements, either by operators in the same corporate group or between non-integrated operators, which may offer price-volume trade-offs that encourage IOT discounting and retail price reductions;
- differentiated mark-ups, where, for example, a higher mark-up would be applied to operators with higher IOT's than to those with lower IOT's;
- applying a higher mark-up could also be considered as infringing possible non-discrimination conditions in their national licenses;
- linking the granting of discounts on IOT's to the granting of equivalent rebates by the home network operator to the final subscribers;
- refusals to deal with operators who do not agree to grant discounts on their IOT's or to pass on the discounts granted to their customers.

Under competition law individual undertakings which are not dominant are not prohibited from discriminating in the application of discounts. As a matter of fact, the inquiry shows that there are probably a few, if any, individually dominant mobile operators on the wholesale markets. In addition, if jointly dominant mobile operators would implement clearly differentiated discount policies - and thus start competing against each other to attract additional foreign subscribers on their networks at the expense of their competitor(s) - the result would be that they would probably fail the joint dominance test, and could thus discriminate against some of their clients.

National Regulatory Authorities are under the obligation to ensure that licensing conditions are consistent with Community competition law and its objectives.

As has been explained above, the absence of preferential roaming and discounting are among the factors that suppress competition in the market for wholesale roaming. If National Regulatory Authorities insist when applying their national regulatory regimes, that national operators must not discriminate in their wholesale roaming charges, this could seriously undermine the future development of competition in this sector.

6. CONCLUSION: POSSIBLE REMEDIES

The Commission considers it important that the impact of some recent technical and commercial developments in the roaming markets is taken into account, in order to consider the scope and suitability of the possible suggested remedies in their actual economic context.

6.1. Roaming offers are evolving

In their responses to the formal information requests various mobile operators have identified a number of technical and commercial developments that will most probably further increase the share of roaming revenues in the turnover of mobile operators and their interest in competing to increase their market share in this growing market.

a) Technical developments

Mobile network operators have noted a number of technical developments that potentially increase the control they have over their roaming customers, possibly eliminating some of the externalities that hamper the emergence of price competition.

- SIM application toolkit and over the air programming will increase the ability of mobile operators to direct roaming traffic onto particular networks, allowing operators to exploit price/volume trade-offs based on preferential roaming and bilaterally agreed IOT discounts;
- CAMEL (Customised applications for mobile network enhanced logic) will allow operators to increase their control of roaming activity and promote offerings of pre-paid roaming and closed user group features;
- New call-back applications increasingly appear to be offering mobile operators the ability to undercut IOT rates for outbound roaming, and consequently to exercise leverage on these rates and/or to obtain access to preferential rates. Some pre-paid card roaming, significantly expanding the customer base, is based on call-back;
- Transferred Account Protocol 3 will improve billing functionality, allowing for retail discounting of individual calls.

b) Commercial developments

In addition to these technical developments, the market structure and the nature of wholesale and retail offerings have begun to change due to a number of commercial developments that took place in the past twelve to eighteen months:

- There are now operators that offer a flat rate for roaming in Member States belonging to the Euro zone or beyond and actively market such rates. Flat rates are easy to remember and facilitate the comparison of roaming prices. Customers are likely to take them into account when choosing between home network operators or service providers.
- The emergence of roaming brokers, who negotiate contracts and hub traffic for other operators, allows new entrants to provide retail roaming without individually negotiating numerous roaming contracts first. Obtaining wholesale roaming access in this way may also help to protect smaller operators from discrimination.
- Pan-European roaming offers are gradually emerging. Some are based on international pre-paid cards; others are eventually likely to be based on integrated networks following mergers between mobile operators that are active in different Member States (Vodafone/Mannesmann;

France Telecom/Orange).²³ These mergers themselves may ensure access to other mobile operators and service providers, as in the case of the Vodafone/Mannesmann undertakings.²⁴

- Preferential roaming agreements, either by operators in the same corporate group or between non-integrated operators, introducing price-volume trade-offs that encourage IOT discounting and retail price reductions are not yet offered although envisaged.

The impact of these recent technical and commercial developments, some of which have been launched after the roaming sector inquiry was initiated, could not yet be assessed. For example, the technical delays in the introduction of the TAP 3 protocol for exchanging roaming call related information has most likely delayed the associated introduction of commercial offers (the main change in the introduction of TAP 3 is the availability of more detailed call information than the previously used protocol, allowing operators to re-rate of roaming calls and by doing this increase the price transparency for consumers). Another example is prepaid roaming. The gradual introduction of prepaid cards with the possibility for roaming may change the roaming related offers significantly. As experience has shown that prepaid cards have had considerable impact on the market growth and tariffs on the national markets, it is too soon to judge the potential impact of prepaid cards on roaming tariffs. The offers currently available are often only available by one operator in a country, but it is clear that competing offers will emerge soon when CAMEL functionality gets widespread implementation (current offers are not CAMEL based and therefore typically very limited in number of operators covered, as a direct relation between operators is usually required today).

It is difficult at this stage to forecast the overall effect of these innovations. In addition to a review of price developments, a detailed review of the impact of the technical and commercial initiatives, already undertaken or planned is required to account for the dynamics of the markets is appropriate in the course of next year. The analysis of possible remedies to the identified lack of competition must also be done in this light. Possible remedies under consideration are:

- guidance on the application of Article 81 and 82 which would specify, among others, what discounting and discriminatory practices could be legitimate under competition law;
- formal proceedings regarding the cases of apparent parallel and/or excessive pricing;
- review of the terms and conditions of the standard international roaming agreement and the IOT arrangement;
- benchmarks;
- measures by national authorities to increase transparency of end-user tariffs co-ordinated with consumer bodies more actively informing users about the roaming tariffs, in particular of the tariffs for domestic roamed calls.

6.2 Guidance explaining the application of Article 81 and Article 82

Several market parties have suggested that the Commission provide guidance on the application of the competition rules to issues such as (joint) dominance, market definitions, access rights, preferential roaming, non-discrimination obligations and discounting in the context of roaming agreements.

Any decisions that the Commission takes in individual cases under Articles 81 and 82 evidently have an effect that goes beyond the parties that are the immediate addressees of such decisions.

²³ Case COMP/M.2016 France Telecom / Orange, Commission Decision of 11.07.2000.

²⁴ See http://europa.eu.int/comm/competition/mergers/cases/index_2000.html; Case COMP/M.1795 Vodafone/Mannesmann, Commission 12.04.2000 and the attached Standard framework agreement for third party roaming access; Standard framework agreement for the provision of wholesale services.

Merger decisions can also establish important principles in this regard. However, on specific issues such as preferential roaming and discounting, specific guidance would provide market players with indications to assist them in designing their future commercial policy. In the past, the Commission already provided similar guidance as regards the conditions under which the use of SIM locks would not be considered as reasonable. Regarding roaming, such guidance could encompass a list of a number of cases where the Commission considers that refusals to deal would not restrict competition and where discrimination - in particular as regards service providers - would not be illegal under the competition rules.

6.3. Open investigations under Article 81 or Article 82 into the IOT's charged

An investigation into possibly excessive pricing by individually or jointly dominant undertakings would require a detailed examination of the market, and cost and tariff comparisons. The possible exploitation of domestic customers is an issue with a purely national dimension, which should in first instance be dealt with by national authorities, in line with the approach set out in the Commission Notice on access agreements.

6.4. Review the STIRA agreement and the IOT arrangement

The GSM-association has requested a formal exemption decision on the STIRA agreement and the IOT arrangement notified to the Commission.

The sector inquiry has so far identified mechanisms in the Standard International Roaming Agreement and the IOT system which are probably dissuading differentiated offers by the parties which could lead to tariff decreases. One of those is that operators should apply their IOTs equally to all other operators, but they are not restricted from applying discounts or incentives, which differentiate between roaming partners. It is true that discounts or incentives are not prevented, but on the other hand, there is also no reason to repeat in the relevant agreement an obligation, which exists in any case under competition law.

An issue that warrants further investigation is why the abandoning of the NNT formula in favour of the IOT arrangement has led to increases in tariffs in the prevailing number of cases.

6.5. Setting Benchmarks

A benchmarking approach such as the one that has been used in other telecommunications markets has been proposed by users' organisations. However, as shown by the reactions of certain operators to the sector inquiry apparently anticipating such a benchmark, this could induce operators to increase tariffs towards the average applied in the EEA. Benchmarking in an oligopolistic market could therefore have the unwanted effect of re-enforcing the identified tendency of parallel pricing.

Moreover, publishing wholesale prices would put no consumer pressure or other significant pressure on operators. Publishing information that an operator in country A applies a wholesale roaming charge to operators licensed in other states which exceeds the benchmark by a multiple of X is unlikely to be of great relevance to consumers in country A, who are never going to make use of these roaming services in their own country. It could also not yield additional peer pressure from other operators. Other operators already know the IOTs that are being charged by their counterparts in other Member States, yet the charges stay high.

Finally, single "across-the-board" benchmarks for international calls may not to be appropriate as a means of regulating international roaming tariffs. Wholesale international roaming levels may be justified with respect to the underlying costs. Costs may be very different in each case. Costs are likely to be different for GSM 900 and GSM 1800 networks, due to the differing cost of building

out networks. Costs will also vary from network to network and country to country depending for example on the license fees originally charged as well as roll out and maintenance costs.

6.6. Improve consumer awareness

The Commission considers it important that the observed lack of end-user tariff transparency should be eliminated as soon as possible. The general unavailability of accurate, up to date, and readily comparable retail roaming tariff information prevents users from exercising their choice to move to a cheaper network and thus reduces any competitive pressure that such end-user choice could have on wholesale tariffs.

At a minimum, existing national consumer protection and sector-specific rules must be enforced in relation to roaming retail rates in an effective manner. In addition, national authorities should encourage mobile network operators and service providers to take into account both the concerns and the possible remedies identified by consumers and users associations when addressing the lack of transparency of retail roaming tariffs.

Appendix I: Abbreviations

2G	Second Generation Mobile Networks (such as GSM networks)
3G	Third Generation Mobile Networks (such as UMTS networks)
3GPP	Third Generation Partnership Project
AUC	Authentication Centre
BSC	Base Station Controller
BTS	Base Transceiver Station
CAMEL	Customised Applications for Mobile Networks Enhanced Logic
CEC	Commission of the European Communities
EDI	Electronic Data Interchange
EEA	European Economic Area
EFR	Enhanced Full Rate Code
EIR	Equipment Identity Register
ESA	EFTA Surveillance Authority
FIGS	Fraud Information Gathering System
GMSC	Gateway Mobile Switching Centre
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HLR	Home Location Register
HPLMN	Home Public Land Mobile Network
HSCSD	High Speed Circuit Switched Data
IA	Indirect Access
IAO	Indirect Access Operator
IN	Intelligent Network
IOT	Inter-Operator Tariff
ISDN	Integrated Services Digital Network
ISP	Independent Service Provider
MCC	Mobile Country Code
MNC	Mobile Network Code
MOC	Mobile Originated Calls
MS	Mobile Station
MSC	Mobile Switching Centre
MSIN	Mobile Subscriber Identity Number
MSISDN	Mobile Subscriber ISDN Number
MSP	Multiple Subscriber Profile
MSRN	Mobile Station Roaming Number

MTC	Mobile Terminated Calls
MVNO	Mobile Virtual Network Operator
NNT	Normal Network Tariff
NRA	National Regulatory Authority
OMC	Operations and Maintenance Centre
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
SIM	Subscriber Identity Module
SMP	Significant Market Power
SMS	Short Message Service
SP	Service Provider
SPNP	Support of Private Numbering Plans
STIRA	Standard International Roaming Agreement
TSP	Tied Service Provider
TAP	Transferred Account Procedure
UMTS	Universal Mobile Telecommunications System
USSD	Unstructured Supplementary Service Data
VLR	Visitor Location Register
VPLMN	Visited Public Land Mobile Network
VPN	Virtual Private Network
WAP	Wireless Application Protocol

Appendix II - Technical Aspects of Roaming

In a number of respects, roaming on a visited network is different from using the home network. Roaming customers usually have the choice between several networks, and therefore network selection (as governed by SIM and handset factors) is required. Registering as well as making and receiving calls on a visited network requires additional signalling as well as specific billing procedures.

Selecting a network

Network selection is governed by GSM standard specifications. There are several factors that influence the choice of the network.

(i) *User (manual) selection*: The subscriber has the ability to select a specific network using the handset's menus and keypad. If the subscriber selects an automatic mode, then the SIM and handset factors take over.

(ii) *SIM-based selection (preferred list)*: SIM cards usually contain a pre-programmed preferred list of networks. When a roaming subscriber enters a country, the handset will look at the preferred list and will search for the first network on the list. If it finds the network's signal, it will log on this network. Network operators stressed in their replies that most mobile handsets allow the user to modify the preferred list. Some handsets appear to override the preferred list if a customer makes a manual selection: The manually selected network will be written to the top of the list and the rest of the networks moved down. Network operators also argued that most SIMs only allow a very limited list of preferred networks compared to the large number of countries where GSM networks exist.

(iii) *Mobile-based selection*: Manufacturers of mobiles appear to have implemented a wide range of algorithms for determining which network to select in case a preferred network cannot be found. Most appear to take received signal strength and quality into account.

The handset will stay on the selected network until its signal strength becomes too low, or another network is manually selected. If switched off and turned on again, the handset usually will not refer back to the preferred list, but will search for the network it previously found.

Some operators have pointed out that, in the future, changes in technology such as the introduction of SIM Application Toolkit in combination with SIM-Over-The-Air-Programming will enable network operators to better direct roaming traffic of their subscribers onto specific networks. The SIM Application Toolkit extends the role of the SIM card, making it a key interface between the mobile terminal and the network. Using the SIM Toolkit, the SIM can be programmed over the air to modify the list of preferred networks. The ability to direct roaming traffic of their customers will give large mobile network operators power to negotiate discounts with roaming partners.

Registering on a network²⁵

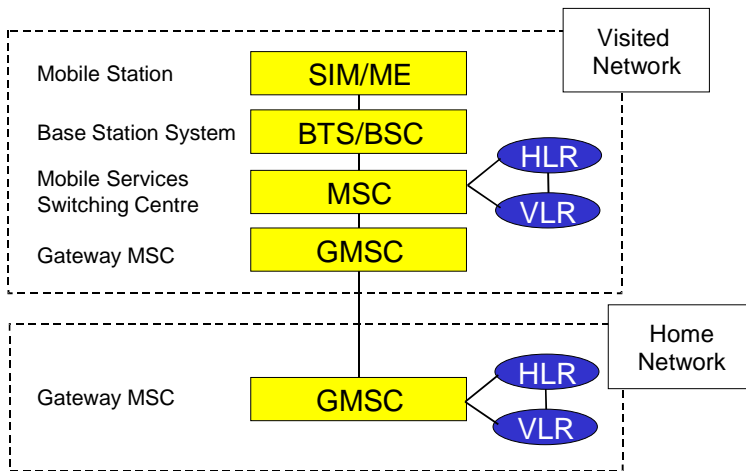
The mobile phone sends a location update request on a signalling channel of the air interface - called random access channel. On receiving the location update request, the Base Station System (BSS) contacts the MSC/VLR (Mobile Switching Centre/Visitor Location Centre). The MSC/VLR checks with the HLR (Home Location Register) to ensure the user is entitled to register, and also to update the HLR as to which VLR to contact regarding incoming calls for that mobile station. The HLR is also able to inform the VLR of any subsequent changes to the customer's subscription

²⁵ For a description, see also Oftel, Mobile Virtual Network Operators: OFTEL inquiry into what MVNOs could offer customers, June 1999, Annex A – How the technology works (<http://www.oftel.gov.uk/competition/mvno0699.htm>).

status.²⁶ The network then sends the successful location update message to the mobile on the paging channel. After that the mobile is registered in the location area and can make and receive calls.

In case of a customer roaming on a *visited* network, additional signalling is required. See Figure A-1 for an illustration. The visited HLR uses the IMSI (International Mobile Subscriber Identity) number to identify the home country and network. The IMSI number, which is stored on the SIM card, is made up of a 3-digit-MCC (Mobile Country Code), a 2-digit MNC (Mobile Network Code), and a 10-digit MSIN (Mobile Subscriber Identity Number). This allows the visited network to send a signalling message to the HLR of the subscriber's home network. The home HLR will then check the roamer's subscription status to see if roaming is allowed. This information is communicated back to the HLR of the visited network.

Figure A-1: Registering on the visited network



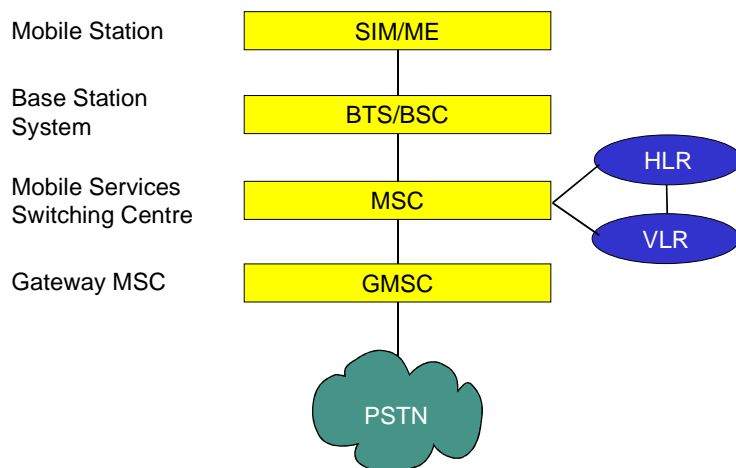
Making a call

Assume now that the mobile is registered and the customer is making a call (see Figure A-2). If the customer is on his/her *home* network, the mobile first sends a request to make a call using the signalling channel (random access radio channel). The Base Station System then assigns a channel and the call will be routed to the MSC. If the call is external to the mobile network it will be routed through the GMSC (Gateway MSC) - using the ISDN - to the network of destination. The final switch or exchange will then route the call to the called subscriber.

For a roaming customer on a *visited* network, there may be a requirement to check with the home network if he/she is authorised to make the call, but this would not normally happen on a call by call basis, and will be dependent on the terms of the roaming agreement reached.

²⁶ Before the location update is completed, authentication may be carried out as well. The EIR (Equipment Identity Register) may also be interrogated.

Figure A-2: Making / receiving a call



Receiving a call

If a mobile subscriber is called on his/her *home* network (assuming the mobile phone is registered), the call will be routed to the GMSC of the home network using the PSTN number. The GMSC interrogates the HLR. The HLR has a translation table to convert the PSTN number to the International Mobile Station Identity (IMSI) number of the mobile subscriber. The HLR will have a record of the last VLR to update the position of the subscriber. The HLR interrogates the VLR, which responds with the Mobile Station Roaming Number (MSRN) for routing. That is the information needed by the Gateway MSC to route the call. The HLR then passes the MSRN to the GMSC which routes the call to the visited MSC.

The visited MSC then sends a paging message to the Base Station System which will initiate the paging request over the air interface to establish a call with the mobile subscriber. The mobile on detecting the paging message for it sends a message on the signalling channel (random access channel) to respond. On receipt of this the Base Transceiver Station (BTS) will allocate a dedicated traffic channel and notify the mobile of this using the paging channel.

If the subscriber is called on a *visited* network, the GMSC of the visited network uses the MSRN to route the call through the PSTN.

Billing

In case of a roamed call, call details captured by the MSC are passed to the network operator's roaming billing system. This system prices calls according to the Inter-Operator Tariff (IOT), and the priced call is written into a billing file known as Transferred Account Procedure (TAP) file. TAP files are then usually passed via EDI link to a clearing house. Figure A-3 illustrates this mechanism.²⁷ In case of errors, the clearing house sends out a validation report to the visited network and requests transmission of a corrected file. Accepted files are sent to the home networks. Since there are economies of scale involved in validating and clearing TAP files, mobile network operators usually outsource these activities to clearing houses.

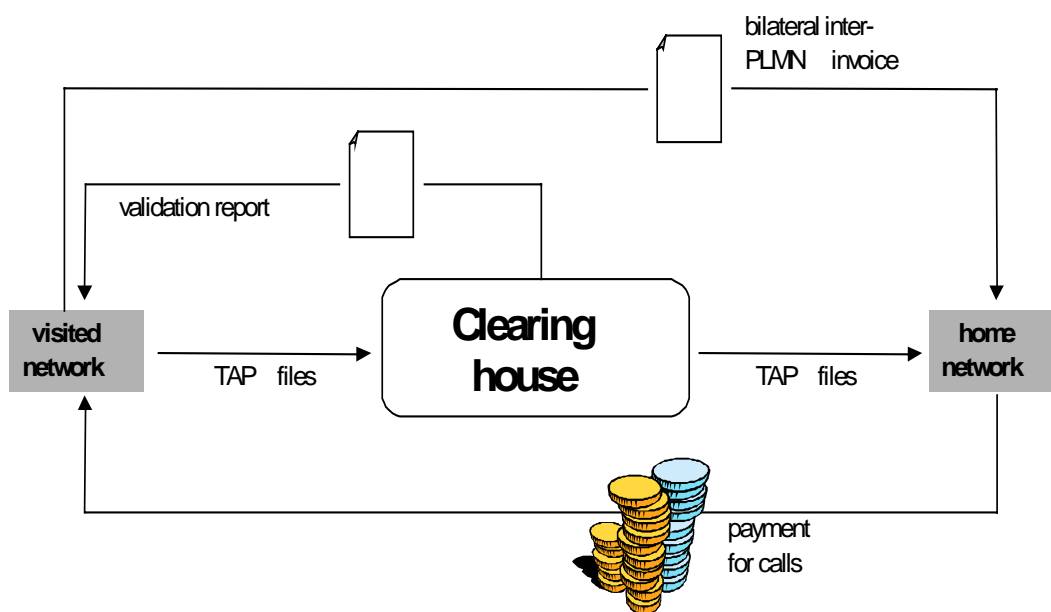
Transferred Account Procedure (TAP) is the GSM Association standard format for the exchange of CDR (Call Record Data) between roaming partners. It allows the visited network operator to send billing records of roaming subscribers to the respective home network operator. The information must include

²⁷ The figure is based on a graph used by Comfone to describe clearing house activities (http://www.comfone.com/frameset_nav4.htm).

both the charges that each subscriber has to pay for the service usage as well as customer care information in case the subscriber requests details of his telephone bill.

TAP3 is the latest version of the standard, which was to be implemented by some operators beginning mid 2000. According to the GSM Association, the new TAP3 supports all features supported by previous versions of TAP, plus high speed data services (HSCSD and GPRS), Intelligent Network functions (CAMEL) like e.g. virtual home environment, pre-paid roaming and short codes translation, separation of business and private billing profile (Multiple Subscriber Profile/MSP), support of Private Numbering Plans (SPNP), SIM Application Toolkit, Enhanced Full Rate Codec (EFR) for enhanced voice quality, and Fraud Information Gathering System (FIGS).²⁸

Figure A-3: Role of clearing house in validating and transmitting billing data



While previous versions of TAP did only allow discounting at the invoice level, TAP3 will make it possible to price individual roaming calls at discounted levels. TAP3 is able to handle all features of the new Inter-Operator Tariff (IOT) such as re-pricing by the home network operator and call level discounts. TAP3, therefore, can contribute to more competition on the wholesale and retail roaming level.

Other types of roaming

SIM roaming

In countries (such as the USA) where GSM networks operate on 1900 MHz frequencies, the usual handsets used in Europe for GSM 900 and/or 1800 MHz frequencies cannot be used. Roaming customers from Europe could use a tri-band handset; in that case they would have access to ordinary international roaming of the type described above. Or they could rent a GSM 1900 mobile phone and place the Subscriber Identity Module (SIM) from their GSM 900 and/or 1800 mobile phones inside; this is usually called „SIM roaming“. The customers change the mobile handset, but continue to enjoy the other advantages of mobile roaming: They can keep their telephone number, they receive only one telephone bill and they have access to all information stored in the address

²⁸ GSM Association (http://gsmeurope.gsmworld.com/technology/why_implement.html).

book as it is stored on the SIM card. Callers will not notice the difference between ordinary roaming and SIM roaming, since customers retain the same number.

SIM roaming is also possible on non-GSM networks. Several mobile satellite system operators employ smart cards in their terminals, and their cards are compatible with SIMs. If the GSM operator has a roaming agreement with the satellite operator, customers can put their GSM SIM card in the satellite phone and it will work. Again, callers will not notice the difference, because the number remains the same, and billing is by the normal GSM operator.
