International roaming explained

Arab World

Contents

1. Mobile roaming explained

International mobile roaming is a service that allows mobile users to continue to use their mobile phone or other mobile device to make and receive voice calls and text messages, browse the internet, and send and receive emails, while visiting another country.

Roaming extends the coverage of the home operator's retail voice and SMS services, allowing the mobile user to continue using their home operator phone number and data services within another country. The seamless extension of coverage is enabled by a wholesale roaming agreement between a mobile user's home operator and the visited mobile operator network. The roaming agreement addresses the technical and commercial components required to enable the service.

The most common international roaming services are:

- **Voice:** Making and receiving calls to or from a home country, visited country or a third country, while abroad
- **SMS:** Sending and receiving text messages to or from a home country, visited country or a third country, while abroad
- **Email:** Reading and replying to emails while abroad
- **Mobile broadband:** Using mobile devices or dongles to access the internet, including to download images, MP3s, films and software, while abroad
- **Applications:** Using mobile applications while abroad that require mobile data, such as location-based services and language translators.

International mobile roaming is one of a wider range of communications services offered to mobile users while travelling abroad. Other services include hotel services, Wi-Fi, national global SIMs cards, multiple SIM card mobile handsets, and local pre-paid SIMs cards.

How mobile roaming works

When a mobile user is abroad and turns their mobile device on, the mobile device attempts to communicate with a visited mobile network. The visited network picks up the connection from the user's mobile, recognises whether it is registered with its system, and attempts to identify the user's home network. If there is a roaming agreement between the home network and one of the mobile networks in the visited country, the call is routed by the visited network towards an international transit network (Figure 1.1). The international transit network carrier is responsible for the call delivery to the destination network. Once this is done, the destination network will connect the call. The visited network also requests service information from the home network about the user, such as whether the phone being used is lost or stolen, and whether the mobile device is authorised for international use. If the phone is authorised for use, the visited network creates a temporary subscriber record for the device and the home network updates its subscriber record on where the device is located so if a call is made to the phone it can be appropriately routed.

Figure 1.1 Overview of international roaming technology and operations

To explain roaming in more detail, Figure 1.2 the shows commercial and technical details for international mobile roaming. The diagram focuses on the international roaming wholesale and retail arrangements, for simplicity.

The mobile user (Mobile User A) has an international roaming service with their home operator (Home Operator) and is automatically connected to a visited network (Visited Operator A) while roaming. Mobile User A is automatically granted access to Visited Operator A's network when arriving in the visited country by an exchange of a data between Home Operator and Visited Operator A, where Visited Operator A confirms Mobile User A is a roaming customer with Home Operator. As such, the wholesale roaming agreement between Visited Operator A and Home Operator specifies how this data is to be provided to the visited operator. Home Operator usually has wholesale roaming agreements with more than one operator in the same visited country, which in this case is Visited Operator A and a second network, Visited Operator B. As a result, Mobile User A can call home using either visited operator networks, both of which use international transit services to carry the call back to Mobile User A's home country.

Mobile User A pays a retail price to Home Operator for the roaming service and does not pay Visited Operator A. Provided Mobile User B is not also roaming, they will not incur any extra charges to receive a call from, or to make calls to Mobile User A.

Visited Operator A sends transferred account procedure (TAP) files to a clearing house which forwards them to the Home Operator. TAP files are used for billing of calls while roaming.

Home Operator can then pay Visited Operator A the wholesale charges as per call volumes in the TAP file and rates in the wholesale roaming agreement.

Visited Operator A pays an international carrier (International Carrier) for carrying the call and handing over the call to Home Operator. International Carrier pays Home Operator a termination rate for terminating the call in the home country.

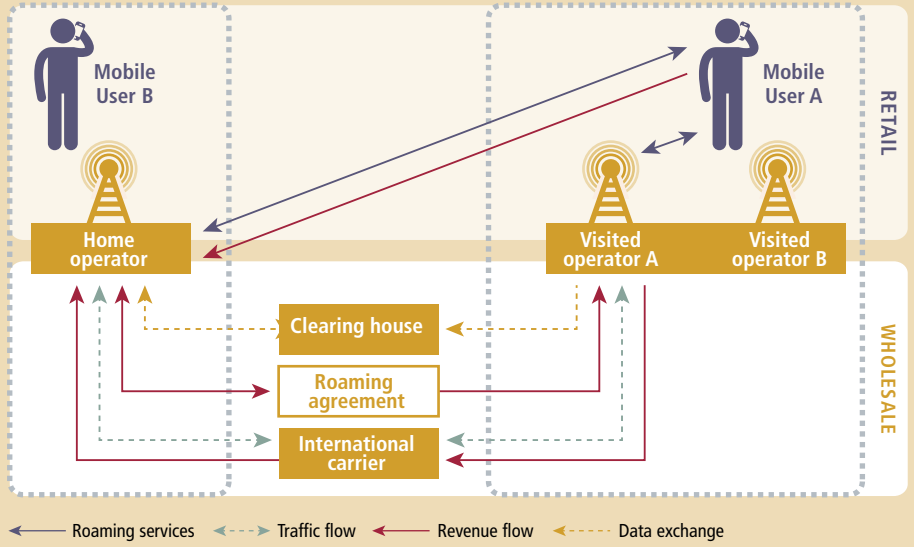

Figure 1.2 Commercial links required for international mobile roaming

Data roaming

With the increasing popularity of feature phones and smartphones, the use of mobile data services while roaming is set to continue to grow exponentially. Mobile data services are typically measured in kilobytes (KB) or megabytes (MB), which refers to the volume of data transmitted for the service used. Data traffic volumes can vary significantly depending on the type and use of different data services.

Activity	Data traffic use
One hour of instant messaging	0.25 – 1 MB
One hour of web browsing	1.5 – 25 MB
Download 100 emails	1 – 10 MB
100 minutes talk on VoIP video calling	Around 50 MB
Download one photo	0.05 – 2 MB
Download one MP3	3 – 8 MB
One software download	70 – 800 MB
Download one film	700 – 1500 MB
Streaming one hour of video	250 – 500 MB
Streaming one hour of audio	50 – 150 MB

Figure 1.3: Mobile data traffic volumes

There are significant differences in the size estimates, as file size depends on the type of data, quality, and file length. For example, high definition and DVD quality streaming consumes greater amounts of mobile data than standard video or audio streaming.

2. Mobile roaming in the Arab World

Countries in the Arab World are at different stages of economic development. In some Arab countries, GDP per capita is up to 41 times higher than in others[2] in the region. However, the average GDP for the Arab region is lower than in the developed world. For example, Europe's GDP average is 3.5 times higher than the Arab region's GDP. Additionally, fixed line penetration is 10% in the Arab states compared to 41% in Europe[3]; and in the last two years local currencies in the region[4] have depreciated by up to 16% against the USD.

The Arab World's mobile market is rapidly expanding, both in subscriber numbers and traffic[5]; however countries vary greatly in market maturity. For instance, penetration rates range between 35% and 196%, and average revenue per user per month varies from $4 to $37[6]. In Q1 2012, approximately 87% of subscribers were prepaid.

Roaming in the Arab World is still emerging and currently counts for just 6% of global roaming revenues, compared with Europe at 39%[7]. Trips originating from the Arab World have risen just 8% from 2005 – 2011[8].

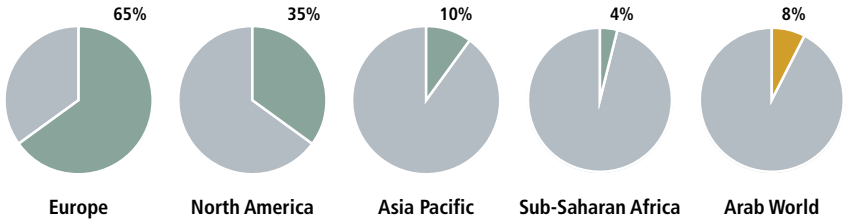

Figure 2.1 Ratio of international trips to population[9] %, 2011

Regional challenges

As the Arab World market develops, structural and technical barriers must be addressed. Introducing roaming regulation while these obstacles remain could result in unintended and unforeseen consequences that negatively impact the industry, mobile users and government revenue.

Structural barriers

Legal and technical developments are required to liberalise international gateways, combat fraud and remove double taxation. Overcoming these barriers is vital prior to any implementation of roaming regulation, as they artificially inflate roaming charges in individual countries.

- **International Gateways** are the facilities through which international calls are sent and received. Where international gateways are not liberalised, their costs make up a significant proportion of the total roaming costs. Even with volume growth, there is no bargaining power for operators working across monopolised gateways. This means inter-operator tariffs are likely to continue to be high. International long distance termination charges are another cost that inflates end-user prices. In the Arab World, around 60% of roaming calls are international calls to the user's home country[10] and although there has been much improvement in the level of competition, international gateway monopolies still exist in at least 31% of Arabic countries.

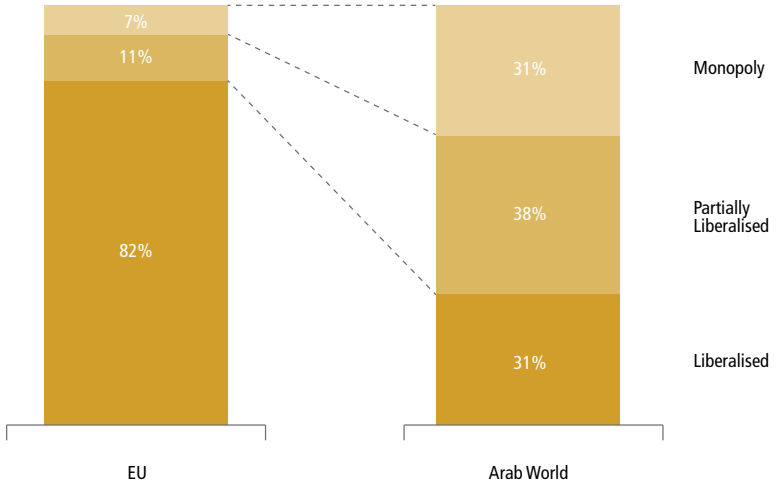

Figure 2.2 International Gateway Status[11]

- **Fraud** remains a major financial concern for operators despite increased efforts and requires further investment in technology and negotiation of roaming agreements for minimisation.

- **Double taxation** inflates retail prices, which affects the industry and mobile users, as well as government revenue. In the Arab World tax rates vary which can complicate the task of roaming pricing for operators. Moreover, many countries levy other local taxes, such as withholding taxes and local and state taxes, which further inflate prices.

Technical barriers

In addition to structural barriers, the industry continues to heavily invest in meeting the technical challenges of international roaming. This level of investment is in addition to the mobile broadband roll outs across the region. Regulatory intervention will diminish the ability of operators to invest in meeting the challenges of mobile broadband roll out.

Technology challenges	Required investment
Prepaid roaming: Operators have invested heavily to enable prepaid roaming, there are still many more post-paid routes available, with prepaid platforms such as CAMEL[11] expensive to implement.	Technical implementation costs, including system upgrades and expansion of prepaid roaming, which burden smaller operators.
Interoperability: use of different GSM/3G spectrum can prevent many low-cost handsets from roaming.	Enforcement and monitoring costs, which will disproportionately burden least developed countries. Additional investment is required by operators to provide consistent quality of service across roaming networks.
Coverage: Network coverage, particularly 3G, remains patchy as operators continue to roll out and upgrade their networks.	Consumer communication and marketing costs will need to increase to promote roaming and ensure transparency.

3. Price trends

The Arab World mobile market is highly competitive and has experienced significant price decreases between 2007 and 2011, with reductions of up to 80% on retail tariffs across all services since 2007[12]. Regionally, market trends are positive and the industry is committed to taking the lead in developing innovative tariffs that suit mobile users. Operators across the region are taking steps to cater for regional business and tourism travellers, and are investing heavily to address technical challenges such as interoperability and quality of service.

Mobile operators offer their customers a selection of tariffs from which they can choose depending on their preferences. With different needs and uses, mobile users can choose the most appropriate tariff to suit them. If regulation determines one price over another, this would mean regulation effectively favours one group of mobile users over another.

Examples of different tariffs available in the Arab region include:

- Low rates for the same network provider abroad (one network)
- Alliance partnerships (SIMs that works in specific countries at the same rate)
- Single preferential rates across Gulf Cooperation Council countries
- Prepaid SIMs tailored for frequent travellers, independent from destination and roaming network and can result in savings of up to 80%.

It should be noted that the structure of these roaming tariffs varies widely, from opt-in regional rates and monthly bundles for post-paid customers, to prepaid roaming tariffs and credits.

4. Impact of regulation

Regulators have expressed concerns about the transparency of roaming charges, consumer bill-shock and certain higher roaming prices. However, these concerns should not necessarily translate to a single global or regional solution. Differences in market conditions between countries may determine higher roaming charges in some countries. As such, regulators should first address concerns at the local level. Uniform regulatory measures may fail to address the source of any problem, and are likely to be detrimental to market performance. Global regulation cannot take into account all the different local market conditions and, as a consequence, may fail to address policy makers' concerns. Additionally, the imposition of uniform regulatory measures may introduce new problems that could have unintended consequences on mobile users and the industry.

- **Impact on developing countries**

  The burden of regulation can fall unequally and disproportionately impact less-developed countries. If global roaming regulation was implemented, less-developed countries could be required to invest heavily to obtain interoperability and high quality services to align with the more advanced, developed countries. This could place an increased financial burden on developing countries to meet regulatory requirements, impacting on funds available for other greater needs for the local population, such as subsidised handsets, or it may result in removing roaming services all together.

Impact on tourist destinations

Countries that rely heavily on tourism are more likely to have invested significantly in network capacity to support roaming. For example, some Arab World countries experience large numbers of in-bound tourists; while sometimes supporting a smaller domestic market of relatively lower revenue customers. In these instances, the economic cost of providing roaming might be significantly greater than the economic cost of providing mobile services to the local population. However, if regulation determines roaming charges to be the same as providing mobile services to the local population, then revenue earned from roaming may not meet the cost to provide this service. Any shortfall might need to be met through increasing prices charged to the local population, which means they may end up subsidising the network capacity used by tourists.

Impact on universal broadband

Universal broadband access in the Arab World depends on the ability of mobile operators to continue their rate of investment. Operators take considerable risks when they invest in an industry that is capital intensive and has a rapid pace of asset replacement and requirement for new technologies. The level of regulation is a strong influence on the investment decisions made by mobile operators and that, in turn, will impact on the services available to mobile users. By reducing the incentive for operators to invest in innovative services, it reduces the likelihood that mobile users will benefit from new services and extended broadband coverage in the future. As such, roaming regulation will ultimately negatively impact on the broadband services available for the unmet needs of consumers.

Impact on the economy

Due to the large variations in GDP, economic growth rates, cost structures and inflation rates in Arab World countries, it is neither reasonable nor practical to adopt uniform pricing for international roaming services across all Arab World economies.

There is huge disparity in inflation among countries and across time. For example, in 2011, inflation rates ranged from 1% in United Arab Emirates to 21%[13] in Iran, impacting operators' costs. Uniform price caps across the region ignore variation in inflation rates and operators in countries with high inflation will be disproportionately affected as their costs increase faster. Increasing traffic will decrease unit costs, but in some cases inflation will offset this reduction, resulting in a margin squeeze.

These impacts suggest large businesses and affluent leisure customers would benefit most from lower prices, rather than the mass market of mobile users who is most often incorrectly cited as suffering from high roaming charges. Competitive market dynamics are the best frameworks from which to determine the price for international mobile roaming services. Mobile users choose a mobile tariff based on the full value it provides across a number of services and operators optimise the pricing and value of the bundled tariff to address the needs of their local market. Regulating on the roaming elements of the tariffs reduces operators' flexibility to tailor its services for the mass market of end-users.

Regulating roaming is a move away from successful liberalisation of telecommunications markets which has promoted technological development and economic progress over the last two decades.

5. Best practice

The industry recognises the concern of regulators regarding international mobile roaming prices. However, regulators need to also recognise that international mobile roaming is a complex service, involving many different factors that can influence price, as described in this brochure. This complexity creates a significant risk that regulatory measures will result in unintended, detrimental consequences for mobile users, governments and the industry, particularly in the long term. Regulating price may result in short-term benefits for mobile users; however, these are more than likely to be offset in the long-term by a reduction in the level of competition and innovation, as evidenced by the European Union experience.

It is for this reason that the industry supports a measured approach to regulation, where regulators:

- Encourage operators to take measures that enhance mobile user awareness (transparency and bill-shock) of tariffs when they travel
- Address structural barriers that increase costs for service providers and mobile users, such as double taxation and international gateway monopolies, as well as those barriers that hold back the development of market based substitutes
- Only consider price regulation after:
  - Other measures have been given sufficient time to conclude there is a persistent problem
  - Clear evidence shows that operators offering roaming services have market power — that is, competition in the market for roaming services is limited
  - Clear evidence shows that the operator company derives its market power from owning a natural monopoly
  - Clear evidence shows the benefit exceeds the cost of regulation.

Industry self-regulation

In June 2012, the GSMA announced an initiative that will provide mobile users with greater visibility of their roaming charges and usage of mobile data services when travelling abroad.

At a meeting held in July 2012, 25 operator groups agreed to undertake a number of measures which will help mobile subscribers better understand their data roaming charges and more effectively manage their use of data services.

The measures include:

- Sending text messages to remind mobile users of their data roaming tariffs when they arrive in another country and turn on their mobile device
- Implementing a monthly data roaming spending limit to help consumers manage their roaming bill and sending alerts when their data usage approaches the limit
- Temporarily suspending data service when use exceeds the spending limit.

The measures – which already cover more than a billion mobile users – will offer a more transparent and uniform experience for all travellers. These operators groups agreed to implement these data roaming transparency measures, extending the coverage to more than four billion connections across 120 countries.

Endnotes

1 http://www.broadbandgenie.co.uk/mobilebroadband/helpmobilebroadband usage-guide-what-can-youget-foryourgigabyte, accessed 25 June 2012

2 A.T Kearney analysis 2012 (Source: Economist Intelligence Unit, Wireless Intelligence, Merrill Lynch Wireless Matrix, ITU)

3 Fixed telephone lines per 100 inhabitants, 2010 – regions are based on ITU BDT region definitions (Source: Economist Intelligence Unit, Wireless Intelligence, Merrill Lynch Wireless Matrix, ITU, A.T. Kearney analysis 2012)

4 All African countries in the region included

5 Estimated per SIM – simple average based on a sample of six Middle Eastern countries, as available from Wireless Intelligence; data for 2011 and 2012 not available (Source: Wireless Intelligence)

6 From Wireless Intelligence – based on latest available data, converted from Euros using exchange rate of €1 = $1.26

7 Based on detailed bottom up data for EU. Arab World based on high-level estimate. Includes wholesale & retail revenues for intra- and inter-region roaming; (Source: Confidential operator data, Gartner, Informa, UNWTO, Economist Intelligence Unit, A.T. Kearney analysis 2012)

8 Based on number of trips divided by population so overestimates % of unique roamers (Source: Confidential operator data, Gartner, Informa, UNWTO, Economist Intelligence Unit, A.T. Kearney analysis 2012)

9 A.T Kearney analysis 2012. Based on number of trips divided by population so overestimates % of unique roamers

10 Based on confidential operator data

11 Sample for Arab World based on 16 countries – data not available for five. (Source: ITU 2011, GSMA Gateway Liberalisation Report, A.T Kearney Analysis 2012)

12 Source: Tariffs in 2012 are taken from operator websites, 2007 tariffs are taken from GSMA Best Tariffs web site

13 A.T Kearney analysis 2012 (Source: Economist Intelligence Unit)

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