

Provision of Broadband & Private Circuits

– Isle of Man

A Benchmark of Prices and Services
September 2009



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Executive Summary

This study examines the provision of broadband and private circuits in the Isle of Man. The study firstly benchmarks the prices of broadband against a number of key comparator jurisdictions and also examines the general competitive environment for the supply of broadband. Secondly, the study benchmarks the provision of private circuits, or Leased Lines, against a number of key comparator jurisdictions.

A previous benchmarking study conducted by GOS Consulting in 2006 concluded that prices for broadband, private circuits and a range of other telecommunications services, benchmarked favourably against other small island economies but less well against larger economies such as the Republic of Ireland and the United Kingdom. This study updates the GOS findings for broadband and private circuits and is based on desk research and interviews with a number of major operators offering services on the Isle of Man, including Manx Telecom. The scope of the study did not extend to a comparison of broadband or private circuit offerings within the island.

The Isle of Man Government has set priorities for the development of e-commerce and the e-society, starting with their strategy published in 2003. The Government's broadband strategy sets out a number of strategic objectives including:

- Encouraging further reductions in the cost of broadband infrastructure and services in order to speed its uptake by both businesses and individuals;
- To ensure the level of broadband penetration in the Isle of Man is ahead of the level of broadband penetration in the UK and other comparable jurisdictions; and
- To encourage an environment where a variety of technologies and suppliers of broadband infrastructure and new, diverse services are active in the market.

In the context of rapid deployment of broadband and increased use of higher speed connectivity in the UK and in other comparable jurisdictions, it is timely to ensure that the broadband products available to Isle of Man businesses and residents are achieving the objectives set out above.

The Isle of Man has a well provisioned telecommunications market. Consumers have a wide range of products on fixed, mobile and broadband markets from which to choose. There has been significant investment in telecommunications infrastructure which has ensured that the telecommunication networks on the island are leading edge. Manx Telecom has invested in Next Generation Technologies and is currently rolling out Asymmetric Digital Subscriber Line 2 plus (ADSL2+) in exchanges around the island which will provide speeds up to 16 Mbit/s.

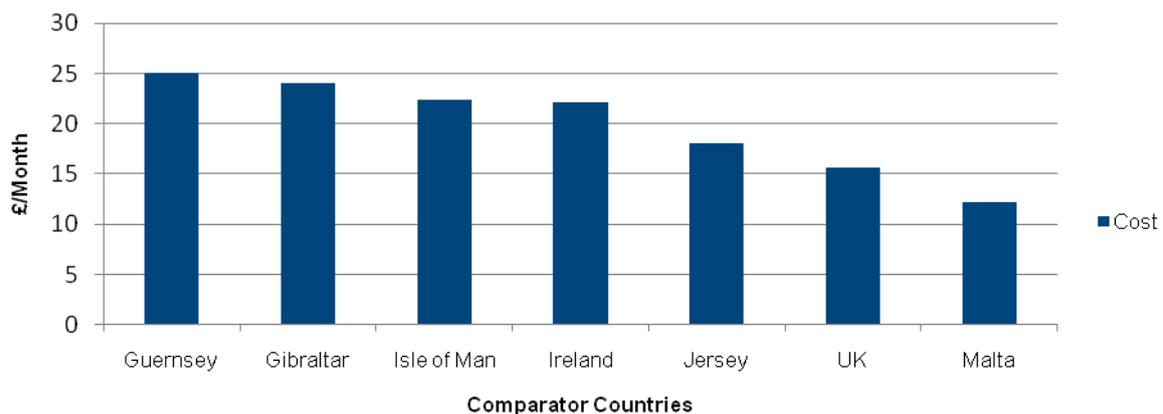
Comparing international benchmarks, the Isle of Man is within the upper tier of broadband nations with a 31.7% population penetration and a 72.3% household penetration. By comparison, the European Union's average broadband penetration by population in 2008 was 22.9%, with the best performing member state, Denmark, achieving 37.2%. The OECD reported that average broadband penetration by population across OECD countries in December 2008 was 22.3%, with the United States at 25.4%.

The first objective of the study is to measure the price of broadband products in the Isle of Man against comparative jurisdictions and to comment on the regulatory and competitive issues which may act as barriers to further choice, price and quality for Isle of Man consumers. The comparison is based on predefined user profiles based on low and high users of broadband. The packages selected are based on the broadband offering of the main incumbent operator in each market. The rationale for using this approach is that in most markets it is assumed that the majority of users in the territory will have used or will use the incumbent. Packages selected, therefore, may not necessarily be the cheapest available at any point in time, however, as offers change on a daily basis in broadband markets it is important to apply consistent criteria to each market to ensure the standard cost of broadband is captured. The package prices selected for comparison are for residential packages inclusive of VAT and for business exclusive of VAT, where applicable.

Broadband

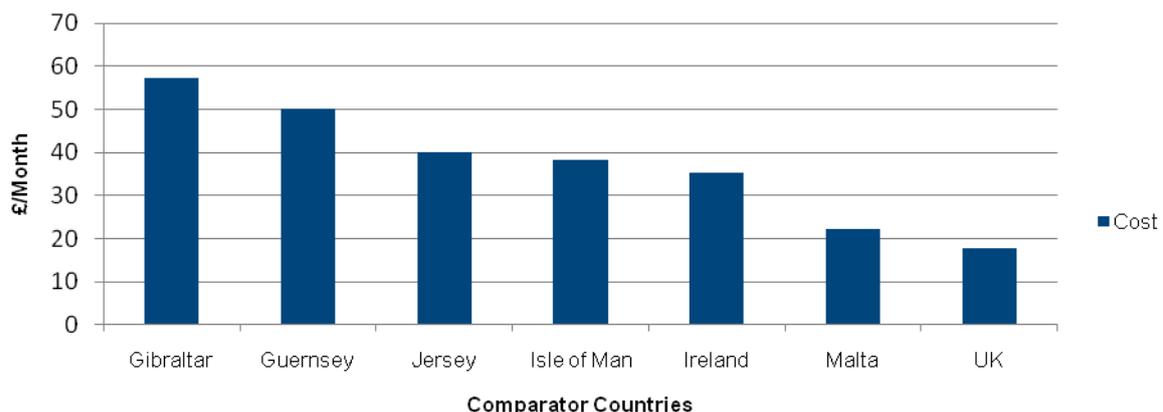
The pricing of broadband in the Isle of Man benchmarks well against other comparable jurisdictions. The figure below shows the monthly cost of broadband for typical residential users.

Figure 1: Entry level residential broadband prices



The prices are compared using user profiles which reflect typical residential and business users. The monthly subscription charged by Manx Telecom is actually among the lowest with only the UK and Malta having a lower monthly fee. The profiles, however, take into account connection charges, where applicable and for residential users the high connection of £46 (£40 exclusive of VAT) makes the Isle of Man more expensive. For Business users the Isle of Man prices compared well against comparator countries.

Figure 2: Entry level business broadband prices



Again the monthly subscription from Manx Telecom is among the lowest, with only the UK, Republic of Ireland and Malta having a lower monthly subscription but the Isle of Man would have a better performance if the high one-off connection fees were not charged.

Price comparisons alone do not reveal the vibrancy of competition which drives price and quality. It is clear from the analysis conducted by PwC that there is a concern expressed by alternative operators that the margin available to them is not sufficient.

A clear, consistent request of all alternative operators interviewed was improved transparency from Manx Telecom on their wholesale pricing. Many of them felt a list of wholesale prices for basic broadband products should be published on the Manx Telecom website. They also felt there was very little advance notice of the launch of new products by Manx Telecom.

PwC believe that Manx Telecom should be obliged to offer clear terms and conditions, including prices geared to cost for wholesale broadband products sold to alternative licensed operators

Obligations such as transparency and non-discrimination are common in most liberalised telecommunications market and a process could be agreed between the Communications Commission and Manx Telecom to improve the wholesale offering made by Manx Telecom to encourage competition.

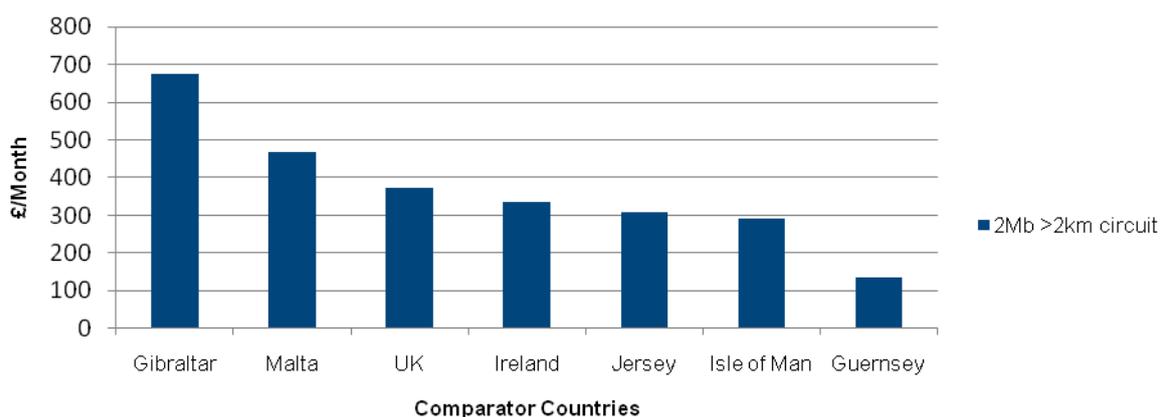
It is also the case that consumers and alternative operators are paying high one-off connection charges, which in a number of the benchmarked jurisdictions is offered for free.

The second part of the study examined the provision of Private Circuits in the Isle of Man. The key findings are detailed below.

Private Circuits

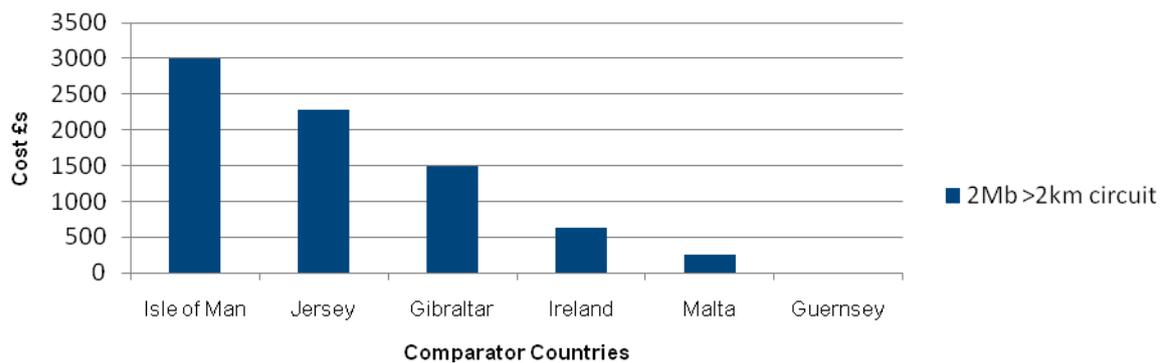
The prices for private circuits are more difficult to compare as many of the wholesale and retail prices are not publicly available. However, based on limited publicly available data, the comparisons shows the Isle of Man prices for low speed circuits to be competitively priced.

Figure 3: Low Speed circuit price comparison



The circuit compared is a 2Mbit/s circuit over 2km in length. This is the most common circuit required by Small Medium Enterprises (SMEs). The analysis shows that the Isle of Man is among the cheapest. However, as discussed with broadband above, the connection charges imposed by Manx Telecom are not in line with charges from the comparator countries. The data on connection charges shows that the connection charge from Manx Telecom exceeds the connection charge for the same circuit in the comparable countries.

Figure 4: Low Speed circuit connection charge comparison



The competitive situation for private circuit provision was also examined and alternative operators interviewed as part of the process. The provision of wholesale private circuits to alternative operators is pivotal in developing a competitive market for high speed data products, particularly for business users. Manx Telecom do not supply wholesale Leased Lines, rather they sell retail Leased Lines at discounts of between 8-10%. This is not comparable to most competitive markets where a range of Leased Line products is offered for both onward provision to end users or as back haul capacity for alternative operators. In comparator countries a more extensive wholesale pricing regime generally exists which enables competition for Leased Lines at the retail market level and more choice for end users, particularly business users.

Conclusions

This report has compared the prices of broadband and, where available, leased line products across a number of key comparator markets. The broadband packages available in each comparator market are detailed in Annex A.

The report concludes that the prices charged for broadband in the Isle of Man compare well with the countries included in the survey. The Isle of Man would significantly improve its placing in the price comparison exercise if connection charges were removed. Similarly, in Leased Line provision, the report shows the Isle of Man competitively priced with comparator countries for popular low speed circuits. The connection charges for these circuits are again high compared to the other countries in the survey.

PwC would recommend that the Communications Commission conducts a study into the levels of connection charges for broadband and Leased Lines. This should examine the underlying cost to Manx Telecom for connections.

In addition, PwC reviewed the competitive supply of broadband and Leased Lines in the Isle of Man. Based on operator interviews this report argues that the margin available on both broadband and Leased Lines needs to be reviewed. In comparator countries, wholesale provision of broadband is typically based on the cost of the provision of broadband. Similarly in the wholesale provision of Leased Lines, the wholesale prices for end to end and partial circuits are based on regulated prices.

PwC recommends that the Communications Commission investigates the introduction of wholesale broadband products, including wholesale ADSL products and unbundled local loops, which are geared to cost. PwC further recommends that the Communications Commission review the wholesale provision of Leased Lines and requests that Manx Telecom introduce wholesale Leased Lines products and include both end to end circuits and partial circuits geared to cost.

1. Introduction

The availability of high speed internet access, at competitive prices, is recognised as a key enabler of the knowledge economy. Increasingly, businesses are availing of online services and fast file transfers which promote business efficiency. The recently published Digital Britain report argues that broadband is a vital service underpinning global economic activity and critical to every business in the economy¹.

Consumer adoption is a key driver of broadband and experience in other markets shows that the take up of broadband depends on a combination of price and connection speeds. The increasing convergence of content, particularly with innovations such as the BBC iPlayer, has driven consumer adoption and demand for higher speeds at competitive prices.

In the Isle of Man, Manx Telecom is the main supplier of broadband services and offers a number of broadband packages. The Manx Telecom offering is primarily based on ADSL (Asymmetric Subscriber Digital line) technology and Manx Telecom has enabled all their exchanges on the Island for broadband. Over the last five years Manx Telecom, which is a wholly own subsidiary of Telefonica, has invested in excess of £50m within the island in leading edge communications technology. There are also a number of independent ISPs (Internet Service Providers) and alternative telecommunications operators offering broadband services.

The Isle of Man Government has set priorities for the development of e-commerce and the e-society, starting with their strategy published in 2003. The Government's broadband strategy sets out a number of strategic objectives including:

- Encouraging further reductions in the cost of broadband infrastructure and services in order to speed its uptake by both businesses and individuals;
- To ensure the level of broadband penetration in the Isle of Man is ahead of the level of broadband penetration in the UK and other comparable jurisdictions; and
- To encourage an environment where a variety of technologies and suppliers of broadband infrastructure and new, diverse services are active in the market.

In the context of rapid deployment of broadband and increased use of higher speed connectivity in the UK and in other comparable jurisdictions, it is timely to ensure that the broadband products available to Isle of Man businesses and residents are achieving the objectives set out above.

¹ Digital Britain report, available at <http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf>

PricewaterhouseCoopers (PwC) were commissioned by the Isle of Man Communications Commission and the eBusiness Division of the Treasury to:

- Review the range, quality and price of broadband services available in the Isle of Man and to compare them with similar offerings in other comparator countries;
- Assess the competitiveness of the broadband market and make recommendations on the actions which could be taken by the Commission to improve the product offerings in the Isle of Man; and
- Examine the competitive situation for private circuits in the Isle of Man and to make recommendations on regulatory actions which could be taken to address any competition concerns in the wholesale delivery of private circuits.

This study benchmarks prices for selected broadband products against a number of key comparator jurisdictions; and goes on to review the general competitive environment in the Isle of Man for the supply of broadband products. The study continues with a high level review of the provision of private circuits with specific emphasis on the wholesale provision of private circuits on the island.

The scope of the study did not extend to a detailed comparison of broadband or private circuit offerings within the island, although the broadband offers from a number of ISPs and Manx Telecom on the island are detailed in Annex A. The benchmarking exercise is focused on how the Isle of Man compares in terms of prices and competition on broadband and private circuit provision with key comparator markets.

A key input to the study was discussions with a number of the Isle of Man operators. A broad cross section of operators were interviewed as part of the study and the discussions informed much of the sections on the competitive environment existing in the Isle of Man.

The analysis and recommendations contained within this report are those of PwC and not that of the Communications Commission or the eBusiness Division of Treasury. The recommendations are submitted on the basis that they may stimulate debate to help the Isle of Man retain and build on its competitive position and its record of technological innovation. Indeed, the recommendations are intended to form the basis of further discussion between the operators, the Communications Commission and the wider community.

2. Isle of Man Communications Market Overview

The Isle of Man has a well provisioned telecommunications market. Consumers have a wide range of products in fixed, mobile and broadband markets from which to choose. There has been significant investment in telecommunications infrastructure which has ensured that the telecommunication networks on the island are leading edge. Manx Telecom has invested in Next Generation Technologies and is currently rolling out Asymmetric Digital Subscriber Line 2 plus (ADSL2+) in exchanges around the island which will provide speeds up to 16 Mbit/s.

The Isle of Man's incumbent telecommunications service provider is Manx Telecom Limited, previously a wholly owned subsidiary of British Telecom (BT), but now part of Telefonica. Broadband connectivity on the island is principally delivered using Asymmetric Digital Subscriber Lines (ADSL). There is 100% broadband access on the island and broadband internet services are available through five local providers: BlueWave Communications; Domicilium; Manx Computer Bureau; Wi-Manx and Manx Telecom.

A number of these providers use the Manx Telecom fixed infrastructure to deliver their retail services, typically with entry level speeds of up to 8Mbit/s. BlueWave Communications does not use the Manx Telecom network for its core broadband services, instead they offer an 8Mbit/s service across a wireless network.

There are a wide range of tariff packages available from all operators. The packages offer different monthly subscription levels depending on the speed and the usage profile of the subscriber (i.e. residential or business user). The following tables detail the range of broadband packages available from Manx Telecom and a leading ISP, Wi-Manx on the Isle of Man:

Table 2.1: Manx Telecom's broadband packages (August 2009)

Package Name	Price (£) per month	Minimum Term (months)	Advertised Maximum Download Speed (Mb/s)	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per additional data (where applicable)	Part of Bundle	Connection Charge (£)
Residential								
Broadband 10GB	18.55	12	16	50:1	10GB	Cap Release Fee £14.68	No	46
Broadband 20GB	22.46	12	16	50:1	20GB	Cap Release Fee £11.74	No	46
Broadband Unlimited	28.33	12	16	50:1	n/a	n/a	No	46
Business								
Broadband Lite	Wires Only: £35	12	16	50:1	n/a	n/a	No	Wires Only: £40
	Managed: £45							Managed: £240
Broadband Business	Wires Only: £55	12	16	20:1	n/a	n/a	No	Wires Only: £40
	Managed: £65							Managed: £240
Broadband Business SDSL 512Kb	Wires Only: £109		512Kb	zero contention	n/a	n/a	No	Wires Only: £250
	Managed: £119							Managed: £575
Broadband Business SDSL 1Mb	Wires Only: £209		1Mb	zero contention	n/a	n/a	No	Wires Only: £250
	Managed: £219							Managed: £575
Broadband Business SDSL 2Mb	Wires Only: £304		2Mb	zero contention	n/a	n/a	No	Wires Only: £250
	Managed: £314							Managed: £575

Table 2.2: Wi-Manx's broadband packages (August 2009)

Package Name	Price (£) per month	Minimum Term (months)	Advertised Maximum Download Speed (Mb/s)	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per additional data (where applicable)	Part of Bundle	Connection Charge (£)
Residential								
Broadband Lite	17.57	6	16	50:1	connection speed reduced to 64k	n/a	No	46
Broadband Unlimited	24.47	6	16	50:1	n/a	n/a	No	46
Business								
Business Lite	Wires Only: £25.52	6	2Mb/s or 512Kb/s	50:1	n/a	n/a	No	40
Business Plus	Wires Only: £55	6	2Mb/s or 512Kb/s	20:1	n/a	n/a	No	40
SDSL 1024	Wires Only: £185	6	1Mb/s	10:1	n/a	n/a	No	250
	Managed: £195							Managed: £240
SDSL 2048	Wires Only: £265	6	2Mb/s	10:1	n/a	n/a	No	250
	Managed: £275							Managed: £575
Wireless Internet (WiMAX)	150	6	1	10:1	n/a	n/a	No	650

Mobile networks on the Isle of Man are advanced with Manx Telecom, through their mobile operation, offering High Speed Download Packet Access (HSDPA). Sure, the brand name for Cable and Wireless, are also active on the island as a mobile operator. The Isle of Man does not have a cable network.

The Isle of Man is well served by both microwave and fibre optic submarine cables linking the island to its geographic neighbours. The main submarine connections are detailed below:

- BT-MT1 (BT, 1990 - UK)
- Manx-Northern Ireland (BT, 2000 – Northern Ireland)
- LANIS-1 (Cable & Wireless, 1992 - UK)
- LANIS-2 (Cable & Wireless, 1992 - Ireland)
- Isle of Man to England Interconnector (e-Ilan Communications is a subsidiary of Manx Electricity Authority, 2007 - UK)

The ability of residents and businesses in the Isle of Man to have competitively priced broadband is a key prerequisite to continued economic growth on the island. The off-island capacity and investments in fixed and mobile leading edge technologies have had positive impacts on the range of services being offered to residents and businesses on the island.

A previous benchmarking study conducted by GOS Consulting in 2006 concluded that prices for broadband, private circuits and a range of other telecommunications services, benchmarked favourably against other small island economies but less well against larger economies such as the Republic of Ireland and the United Kingdom. This study updates the GOS findings for broadband and Private Circuits.

3. Comparative Countries

This report benchmarks the provision of broadband and Private Circuits on the Isle of Man against similar provisions in a number of key comparator countries. The Republic of Ireland and the United Kingdom were selected as comparator countries on the basis of geographic proximity and cultural and economic importance to the Isle of Man.

Jersey, Guernsey, Malta and Gibraltar were also selected as comparators due to their similarities with the Isle of Man. Specifically, they are island jurisdictions with relatively small populations and share some similarities in their economic activities. The key characteristics of the countries selected are set out below:

Jersey

In 2002, the Telecommunications (Jersey) Law 2002 abolished the States monopoly on the provision of telecommunications in Jersey (via Jersey Telecom) allowing full competition. Currently, the biggest ISPs are Jersey Telecom and Newtel Ltd (an independent, privately owned Channel Island telco). Broadband ADSL Internet access is offered by both Jersey Telecom and Newtel Solutions as a wholesale reseller of the Jersey Telecom Rapid branded product.

Currently, Jersey Telecom operates a single speed ADSL of 2 Mbit/s downlink and 384 Kbit/s uplink. The contention ratios vary between its various product offerings from 20:1 up to 50:1. Jersey Telecom has also recently introduced an SDSL product range, with a contention ratio of 10:1. Both Sure (Cable & Wireless Jersey) and Airtel Vodafone have also launched a mobile broadband service in Jersey and Sure will be launching a fixed line service later in 2009.

Guernsey

Sure (Cable & Wireless Guernsey) is the incumbent provider of fixed-line telephone and broadband services in Guernsey. It was formerly the government-owned Guernsey Telecoms (GT), provided by the States of Guernsey Telecommunications Board. Sure own the fixed network, and Wave and Newtel, two additional ISPs, both provide their service from Sure's network Airtel. Vodafone launched a mobile broadband service in March 2008.

Gibraltar

Gibtelecom, is co-owned by the Government of Gibraltar and Slovenia Telecom. In 2002, Gibtelecom introduced ADSL services to the island. Sapphire Networks Limited (a merger of Gibnet Limited and broadband Gibraltar Limited in 2005) is a private company which began internet services in 1996.

Sapphire has its own redundant fibre and microwave infrastructure into and around Gibraltar. Sapphire also uses the Gibtelecom ADSL concentrator to reach customers that are outside their own network, and sells high Internet bandwidth services and internet connectivity competing directly with Gibtelecom. Yachtconnect, a Wi-Fi operator provides a prepaid or subscription wireless internet

service around the marinas. CTS Gibraltar Ltd launched a WiMax service in 2008, competing against the established ADSL providers. CTS has now expanded into wired ADSL for nearby housing estates and has also set up a rival GSM service.

Republic of Ireland

In early 2006, Ireland had one of the lowest broadband penetrations in Europe. However growth has been strong in recent years, with the take-up of fixed broadband internet growing to 20% in 2008 (up 3% from 2007) - nearing the EU average of 23%. Mobile and cable operators attracted new broadband customers in 2008, with mobile broadband penetration reaching 20.5% (largely above the EU average of 13%) and cable broadband lines expanded by almost 33% from 2007. DSL remains the main technology (74% of subscribers Jan '09). Eircom (the incumbent) and BT are the largest DSL providers in Ireland.

Eircom's market share of retail broadband subscriptions is 44%. Alternative operators using either Bitstream or LLU represented 19% and the remaining 37% was held by operators on alternative broadband platforms including cable broadband, fixed wireless, fibre, satellite, and mobile broadband subscriptions.

DSL coverage in rural areas was 73% in 2007, an increase of 9% from 2006. This is still 16% less than national coverage though this gap narrowed from 22% in 2006. Ireland has launched a National broadband Scheme (NBS) to extend broadband access to the estimated remaining 10% of Irish people without broadband access.

Malta

Fixed broadband penetration increased rapidly by 7% to reach 23.9% in January 2009, above the EU average of 22.9%. This was the result of:

- Competitive pricing between different types of internet connections
- Government initiative launched in March giving consumers a free one year subscription
- Consumers are also paying less for faster internet connections as a result of increased competition

Mobile broadband connections increased over the same period, with a penetration rate of 10% (EU average, 13%). Further improvements occurred in the price-speed ratio; with the vast majority of subscribers (94.5%) enjoying speeds of 2Mb/s or higher. Retail broadband lines in technologies other than DSL had a market share of 53.2% in January 2009, overtaking DSL for the first time. The fixed incumbent's market share, GO (formerly known as Maltacom) (38.3%) is decreasing steadily. However, the incumbent strengthened its share of DSL lines, to reach 82% in January 2009, as the market share of the non-incumbent ISPs was shrinking. Vodafone Malta was the first to launch wireless broadband services in 2007, which proved very popular with customers.

United Kingdom

The UK broadband penetration rate rose to 28.4% in January 2009 compared to 25.7% in January 2008, which constitutes a growth rate of 2.7% which is close to the EU average growth rate of 2.8%. National DSL coverage increased from 99.5% from year end 2006 to 99.6% at the end of 2007. DSL coverage in rural areas increased from 95% to 96.1% over the same period (the gap between rural and national from 4.5% to 3.5%). Approximately 5.5m LLU lines were in place in January 2009, compared to slightly less than 4m in January 2008. The fixed incumbent's (BT) share of the retail

broadband market slightly decreased (25.4% compared to 25.8% a year ago) - the lowest for a fixed incumbent in the EU.

In 2008, Virgin Media (major cable company) launched 50 Mb/s services to consumers. BT also announced a £1.5bn investment into Next Generation access networks up to 2012, which will allow data rates of about 40Mb/s. In addition, BT has deployed a fibre to the home (FFTH) solution in a first new build site, with data rates of 100Mb/s - a number of other entrants are also planning to roll out a similar service to new builds (e.g. Fibrecity). In January 2009, 56.5% of fixed broadband lines were in the access speed range of 2-10Mb/s, while 36% of lines were in the speed range below 2Mb/s. The reported share of high-speed lines of above 10Mb/s was 7.4%, which is below the EU average of 14%.

3.1 Comparisons

A number of factors need to be considered in comparing countries. The costs of rolling out telecommunications are, in part, determined by the proportion of people living in rural or urban accommodation, commonly referred to as population density. It is more costly to roll out fixed high speed telecommunications services to more remote parts of territories as line lengths and lower population density make the investment increasingly uneconomic. Broadband roll-out across Europe has been concentrated in more populated areas because of the high investment costs in rolling out services to scarcely populated areas. This implies that the economics of infrastructure roll out, particularly to rural areas, in the Isle of Man are more challenging.

Based on data in Figure 3.1 it is clear that the Isle of Man has a lower population density than the other small island economies in the sample. Indeed, only the Republic of Ireland has a lower population density.

Despite the challenges of population density and topography, the Isle of Man has 100% broadband access and high broadband penetration. According to the European Commission, only smaller and predominantly flat countries like Luxembourg, Denmark, the Netherlands and Belgium exhibit 100% rates of rural coverage via fixed or wired technology (DSL and cable networks as opposed to wireless or mobile technologies) and many countries do not seem to manage increasing wired coverage beyond 90% of rural population².

² COMMISSION OF THE EUROPEAN COMMUNITIES - Commission staff working document published Brussels, 04.08.2009 http://ec.europa.eu/information_society/eeurope/i2010/docs/annual_report/2009/sec_2009_1060_vol_1.pdf

Figure 3.1: Fixed broadband penetration by population compared with population density^{3 4}

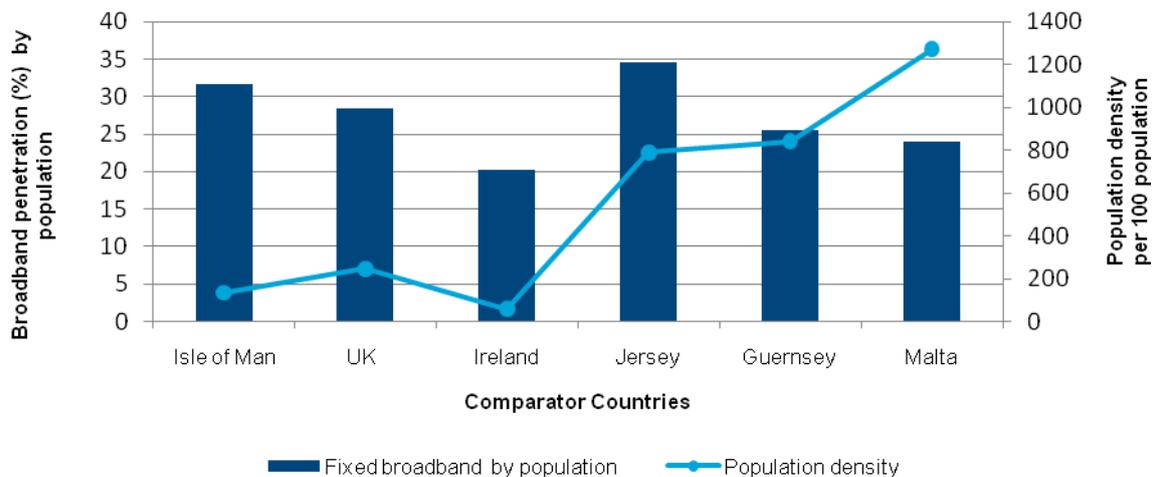


Figure 3.1 compares the population density with fixed broadband penetration and shows that the Isle of Man broadband penetration by population currently stands at 31.7% which is ahead of the UK at 28% and the Republic of Ireland at 20%. Of the small island comparator countries selected, the Isle of Man is second only to Jersey on broadband penetration as measured by population. This has been achieved despite having lower population density and a more challenging topography than both Jersey and Guernsey.

Comparing international benchmarks, the Isle of Man is within the upper tier of broadband nations with a 31.7% population penetration and a 72.3% household penetration. The European Union’s average broadband penetration by population in 2008 was 22.9%, with the best performing member state, Denmark, achieving 37.2%. The OECD reported that average broadband penetration rate by population across OECD countries in December 2008 was 22.3%, with the United States at 25.4%.

3.2 Approach to Benchmarking

The comparison of broadband prices can be difficult given the range of bundles and special offers available in most markets. Broadband is recognised as a product, delivered across a fixed or cable network which allows always-on, high speed access to the internet. In Guernsey, Sure offer a pay as you go broadband package which is cheaper than the standard always-on broadband package and may appeal to infrequent broadband users. Despite this package being cheaper than other comparable broadband packages in Guernsey, this pay as you go package cannot be compared with other broadband packages as it is not an always-on product.

In all of the comparator markets there will be a range of broadband offers, many of which will be part of a bundle of services. It is very difficult to assess all of the broadband offers in each market benchmarked. Therefore, it is important to benchmark using internationally recognised approaches to comparing telecommunications services. The approach adopted for this study is used by the

³ Data for UK, Ireland & Malta from EU 13th Implementation report February 2009. Jersey data is taken from the Telecommunications Statistical Review 2008, JCRA. Guernsey data is taken from the Telecommunications Market Report Jan-June 2008 doc no. 09/04. Isle of Man data is supplied by Manx Telecom based on subscriber base of 24,100 (May 2009) and population of 76,220

⁴ Gibraltar is excluded from this graphic as the population density is significantly at variance to other comparator countries and would make comparison irrational

European Commission and by the OECD in comparing telecommunications services. The approach adopted therefore selects broadband packages with a number of characteristics:

- Packages selected are not promotional offers. As promotional offers are generally transitory it is assumed consumers will eventually pay a higher price and all operators will use promotional offers for short periods to gain market share;
- Packages are not part of a bundle. It is difficult to assess the true cost of broadband within a bundle of fixed or mobile services; and
- Packages selected are based on the broadband offering of the main incumbent operator in each market. The rationale for using this approach is that in most markets it is assumed that the majority of users in the territory will have used or will use the incumbent. The incumbent operator is typically a former sole supplier of telecommunications who normally retains ownership of the principal fixed network and often retains high market share in most telecommunications market segments. Using the incumbent's packages therefore reflects the costs to a large number of broadband users.

Packages selected therefore may not necessarily be the cheapest available at any point in time however as offers change on a daily basis in broadband markets it is important to apply consistent criteria to each market to ensure the standard cost of broadband is captured.

To compare broadband packages across jurisdictions, with differing product characteristics, this report adopts a typical residential and business user profile to assess the cost of broadband provision consistently across territories. The objective is not to argue that a particular package in any market is cheaper than another but to have consistent user profiles which can be compared across a number of markets and show the underlying cost for typical consumers.

Table 3.2: User profiles

	Residential User	Corporate User
Typical usage per month	15 hours	30 hours
Typical download usage per month	1GB	5GB

Broadband packages available in most markets have a number of constraints or non-price conditions which impact on the overall service quality or speed. Therefore, a further comparison was taken based on the cost per one megabit of download speed⁵. In many jurisdictions the broadband packages available are not differentiated on price but on download speeds. In the markets examined in this report there are differences in the speeds available. It is not always the case that consumers demand high speeds and for some consumers the overall package cost may be more important.

There are also differences in the contention rates applicable to packages. The higher the contention ratio the more broadband users are on a given circuit, for example a contention ratio of 50:1 signifies that there can be up to 50 users on one line. High contention rates can lead to issues around speed and quality of service and so it is important to assess these characteristics as they reflect the quality of the product offered. However, as they are non-price variables it is difficult to factor them into the profiles.

For each comparator country, PwC collected a wide range of broadband tariff data for both the incumbent operator and the main competitor in each market. The data was used to compile the user profile and benchmark data. The country profiles and tariff information for all comparator markets, except the Isle of Man, was collected from the respective company websites in April 2009. The Isle of Man data was collected in August 2009. The profiles are detailed in Annex A.

⁵ The profiles chosen are adapted from the EU Commission/Teligen profiles published as part of the Implementation report. The profiles do not represent types of customers on specific price plans but are representative of low, medium or high usage

4. Review of Broadband Pricing

4.1 Overview

The delivery of broadband in the Isle of Man is mainly provided using the Manx Telecom network. Both Manx Telecom and most of the Internet Service Providers (ISPs) use the Manx Telecom infrastructure to deliver broadband. Alternative operators (mainly ISPs) are given a wholesale price from Manx Telecom. The ISP generally bills the customer directly and uses the Manx Telecom network to deliver the service. Manx Telecom then charges the ISP a 'wholesale' price for the use of its network. This method of delivering broadband is typical in all of the countries benchmarked for this report.

In a number of countries regulators intervene to agree the wholesale prices and processes for alternative operators, and in some cases to set minimum service and quality levels. In countries such as the Republic of Ireland, United Kingdom, Malta and Gibraltar, a European Framework exists for the regulation of electronic communications networks and services.

Within EU Member States, where an operator has been found to have Significant Market Power (SMP), a position equivalent to dominance in a relevant market, additional regulation or remedies are typically imposed. This is to ensure there is sufficient visibility or transparency of prices and services for market players. Remedies help to ensure alternative operators, who incur sales, marketing and billing costs, generate sufficient return on wholesale prices so that they are able to compete for broadband customers.

It is common in EU regulated wholesale environments for transparency and non-discrimination to be enforced through obligations placed on an operator found to have SMP. Regulators typically require prices to be published on the operator's website and an additional obligation can be to notify the regulator of price changes in advance of their commercial launch. This allows the regulator to ensure the new products are available as wholesale products to other operators and that the prices proposed for both retail and wholesale represent a reasonable margin to sustain competition in the market.

4.2 Importance of Broadband

The development of affordable, high speed broadband is recognised as a key building block for the new economies. Broadband allows individuals and organisations to communicate and access services regardless of their geographical location. It enables businesses to communicate with clients and suppliers and limits business migration to urban areas.

The recently published Digital Britain report re-emphasised the UK's commitment to broadband by setting a target universal broadband commitment for speeds of 2Mb/s in the United Kingdom by the end of 2012⁶. The Digital Britain report estimates that today there are around 1.5million households in UK who have little or no broadband availability which puts the Isle of Man around five years ahead in terms of universal coverage. Other European Countries, notably France and Germany, have set

⁶ Digital Britain report, available at <http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf>

universal service broadband targets which aim to ensure rural access to high speed internet and not just urban access.

Broadband is the key infrastructure to deliver the productivity benefits available from Information Communications Technology (ICT)⁷. The European Union through its i2010 Lisbon strategy⁸ has identified three effects of increased use of ICT:

- Efficient technological progress in the production of ICT goods and services;
- Investments in ICTs lead to more capital and greater productivity; and
- Greater use of ICTs increases the efficiency of the whole economy.

Broadband penetration is increasingly seen as an indicator of economic progress. The explosion in the use of digital devices, which depend on internet access, has driven the demand for broadband and for faster broadband speeds. The Digital Britain report expects digital content to increase 10x to 100x in the next 3 to 5 years. The industry which develops this content will be among the fastest growing sectors in the coming years.

Broadband penetration across the European Union is set to expand. Based on estimates from the EU, its broadband penetration rate was 22.9% of the population at the end of 2008. This represents an increase of 3.5% on 2007. EU Commission reports have confirmed that broadband penetration is driven by competitive platforms and affordable pricing. With almost 80% of all broadband in Europe being based on fixed line penetration, the importance of fixed line competition in the delivery of broadband is vital.

Cross platform competition, either from mobile or cable broadband offerings, have been shown to incentivise fixed operators to roll out competing fixed broadband services. Equally, the availability of wholesale offerings such as wholesale broadband products like 'bitstream' or the unbundling of the 'last mile' is also seen to encourage investment by alternative operators.

4.3 Benchmarking Prices

As discussed earlier, this report benchmarks both business and residential broadband packages and compares the prices using selected user profiles. The package prices chosen for comparison are for residential packages inclusive of VAT and for business exclusive of VAT, where applicable.

Residential

Residential broadband packages differ from comparator countries in terms of the packages offered. Manx Telecom offers an entry level price with a high speed relative to some other countries. Isle of Man prices compare favourably particularly when compared on a per megabit basis where it is second only to the UK. However, Manx Telecom is the only operator surveyed to charge a connection fee for residential broadband. The connection fee of £46 (£40 exclusive of VAT) is subject to a minimum 12 month contract. Connections do have an associated cost for operators but have been waived in many markets as an inducement to switch broadband supplier or to attract new broadband subscribers. The connection charge adds to the overall cost of connection and is factored into the comparative data below⁹.

⁷ Short for Information and Communications Technology, it is the study or business of developing and using technology to process information and aid communications

⁸ Further information on the i2010 strategy is available at ec.europa.eu/information_society/eeurope/i2010/index_en.htm

⁹ Connection charges, where applicable, are amortised over the one year period of the contract

Figure 4.1: Residential broadband per typical user profile package

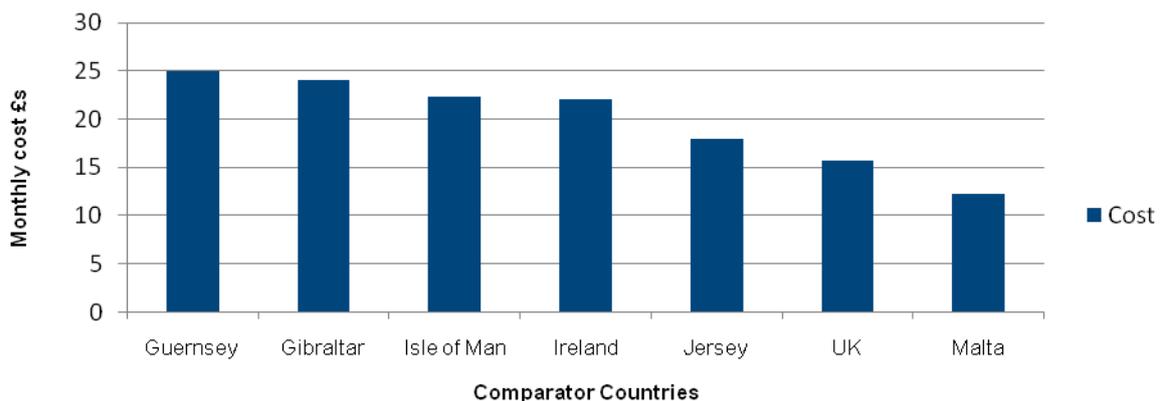


Figure 4.2: Residential broadband per megabit

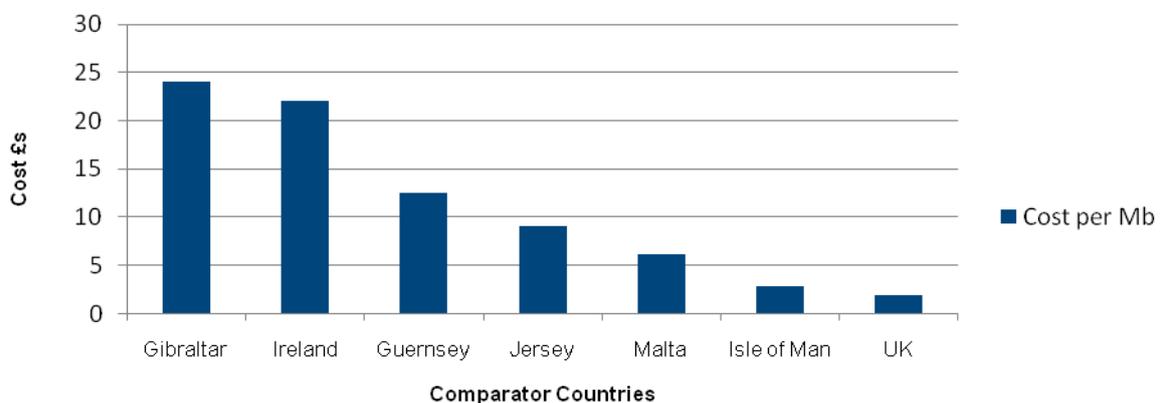


Figure 4.1 shows that Malta has the cheapest residential profile, with Guernsey having the most expensive. With the inclusion of the connection charge, the Isle of Man is the third most expensive; however excluding the connection charge would improve the performance of the Isle of Man.

The costs per 1Mb in Figure 4.2 shows that the Isle of Man cost (based on an 8Mb/s package on Island) are the second lowest in the jurisdictions sampled. This may be misleading to the extent that consumers have limited choice with download speeds and may, in fact, not require the high download speeds advertised. However, it is useful to examine prices at a megabit level to show countries where there may be low advertised speeds and higher prices¹⁰.

As speeds increase it does not necessarily follow that prices increase. Indeed, in the Isle of Man, the upgrade of the Manx Telecom fixed network to ADSL2+ technology will enable download speeds of up to 16Mb/s - without any change in monthly prices.

The residential packages compared are shown in Table 4.1. The Irish and Malta packages are converted from euro to sterling for comparison purposes.

¹⁰ The cost per megabit takes the monthly cost divided by the advertised download speed

Table 4.1: Residential packages used for comparison purposes

Country	Package	Connection Charge (£)	Monthly Subscription (£)	Data Cap	Contention Ratio	Speed
Isle Of Man	MT: Residential broadband	46.00	18.55	10GB	50:1	8Mb/s
Jersey	JT: Rapid 20GB	n/a	17.99	20GB	50:1	2Mb/s
Guernsey	Sure: Anytime broadband ¹¹	n/a	24.99	n/a	40:1	2Mb/s
Gibraltar	WOW Standard	n/a	24.00	15GB	n/a	1Mb/s
Ireland	eircom Home Starter	n/a	25.09	10GB	48:1	1Mb/s
Malta	GO Plus	n/a	13.86	25GB	n/a	2Mb/s
UK	BT Fast & Reliable	n/a	15.65	10GB	n/a	8Mb/s

The contention ratio, noted in the table above is a ratio representing the number of subscribers on each access line. A contention ratio of 50:1 means that up to 50 customers are sharing the same connection. Contention is more of an issue for Business customers and is discussed in more detail below.

Business

Broadband packages for business users are available across all the countries surveyed. In most of the countries surveyed the entry level business package has a download speed of 8Mbit/s, with the exception of Jersey where the entry business product is 2Mbit/s download, and Guernsey where the entry product offered is 4Mbit/s download. Table 4.2 summarises the key features of the business packages compared. For those countries where the prices are originally in euro these have been converted to sterling¹².

¹¹ Sure in Guernsey offer a pay as you go Broadband offer. For a lower fixed monthly rental of £14.99 designed for lower usage customers. The package offers 300 minutes free Broadband usage, with a charge of 3p per minute to a maximum monthly cost of £34.99. This package is not directly comparable with the packages in Table 2 as it is capped in terms of minutes as opposed to data

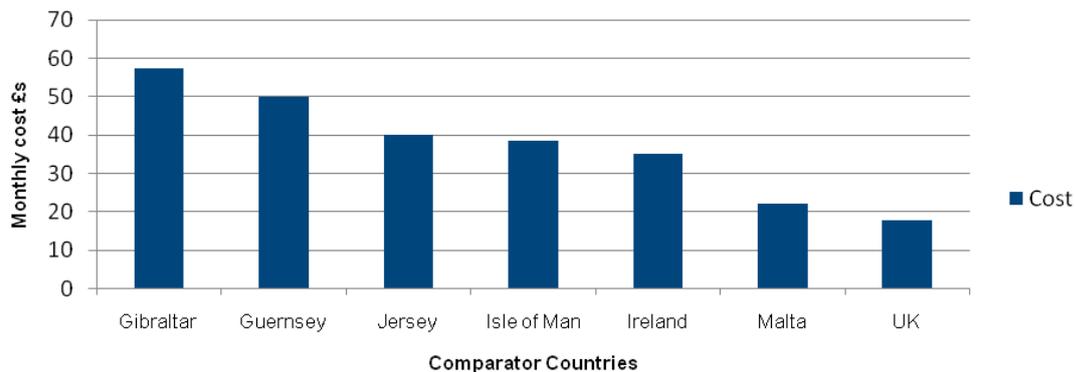
¹² Exchange rate €1 = £.8805

Table 4.2: Broadband packages compared (VAT excluded) ¹³

Country	Package	Connection Charge (£)	Monthly Subscription (£)	Data Cap	Contention Ratio	Speed
Isle of Man	MT: Business Lite ¹⁴	40.00	35.00	n/a	50:1	8Mb/s
Jersey	JT: Rapid Business	50.00	35.99	40GB	20:1	2Mb/s
Guernsey	Sure Pro 4MB	n/a	49.99	n/a	20:1	4Mb/s
Gibraltar	WOW Enhanced	40.00	54.00	50GB	n/a	8Mb/s
Ireland	eircom Home Professional	n/a	35.21	50GB	24:1	7.6Mb/s
Malta	GO Business	n/a	22.08	100GB	n/a	8Mb/s
UK	BT Heavy User	n/a	17.86	15GB	n/a	8Mb/s

The Isle of Man is competitively priced with Guernsey, Jersey and Gibraltar both in terms of business packages offered and the relative price per megabit of download speed but compares less well with Malta and the UK.

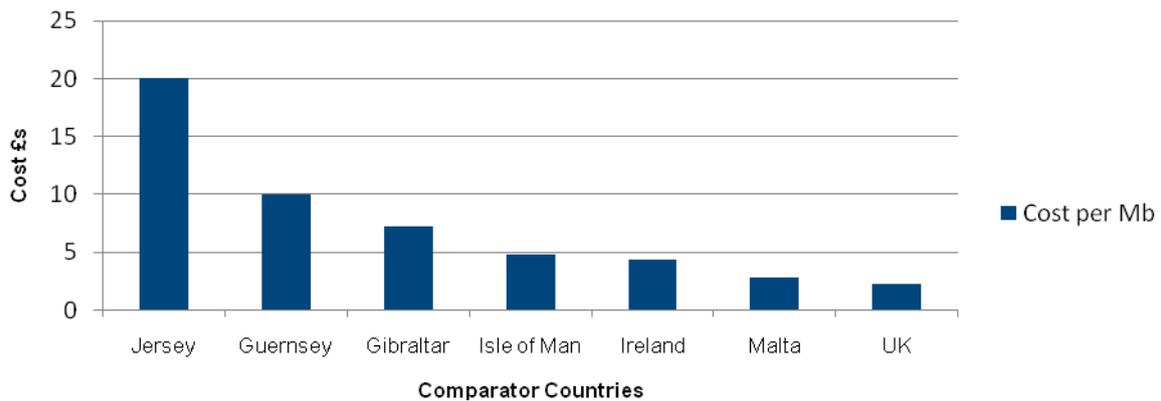
Figure 4.3: Business broadband per typical user profile package



¹³ VAT has been excluded from all calculations on business tariff comparisons. VAT does not apply in Guernsey, Gibraltar or Jersey although Jersey has a GST of 3%. In the remaining countries UK Vat is 15%, Rep of Ireland VAT is 21.5%, Isle of Man Vat is 15% and in Malta 18%. It is assumed that anyone availing of business tariffs is registered to claim back these taxes

¹⁴ Manx Telecom also offer business packages with a lower contention ratio of 20:1 for £55 per month,

Figure 4.4: Business broadband cost per megabit



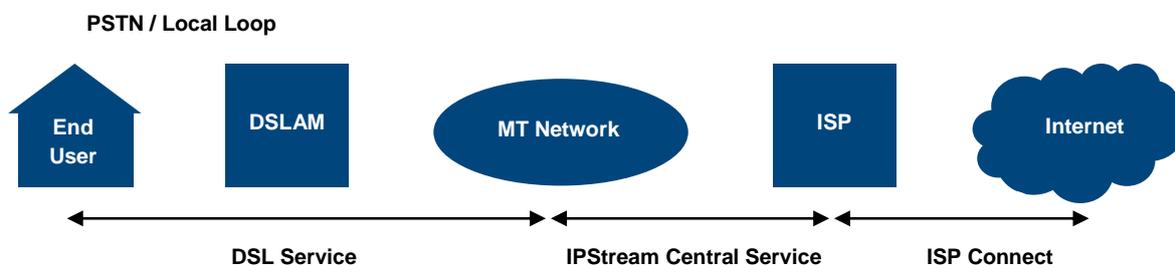
As discussed a key issue for users, particularly business users, is the contention ratio. The contention ratio represents the number of subscribers on each access line. A contention ratio of 50:1 means that up to 50 customers are sharing the same connection. When usage is light, contention does not pose a problem. However, the quality of the connection can deteriorate if many customers use the connection at the same time. For example, if all 50 users are using a 2Mbit/s broadband service at the same time, your access speed is reduced to about 41Kb/s. The higher the ratio the more likely it is that service levels could be compromised.

Manx Telecom’s contention ratio is 50:1 on the entry level products compared but they do offer lower contention ratios on the more expensive plans. For example a contention ratio of 20:1, more in line with comparator countries, is available on the ‘Broadband Business’ package which is £20 more expensive per month. Although at £55 per month, this package is not as competitively priced as the business packages compared in Jersey and Guernsey.

4.4 Other Issues Related to the Provision of broadband

Wholesale broadband internet access

Since Manx Telecom is the incumbent infrastructure operator it is obliged to provide essential network access facilities to alternative operators who wish to provide consumers with a DSL-based service. This facility can be configured to suit particular end-user requirements and Manx Telecom has separate offerings for residential and business users. The diagram below illustrates the various wholesale services required by each ISP in order to provide an ADSL access service to end-users:



The diagram illustrates the various wholesale services required by each ISP in order to provide a DSL access service to end-users, namely:

- The wholesale DSL access service provides a connection between the end user, the local exchange and on into the MT network;
- The IPStream Central service carries the aggregate traffic to the ISP;
- The ISP Connect service is an option for ISPs to buy Global Internet access from Manx Telecom.

Of the various network components that an ISP may require, this section of the report focuses on the wholesale prices that it has to pay for the DSL-enabled link between each consumer's premises and the local exchange (sometimes referred to as the End User Data Path or local access link).

Manx Telecom has a single wholesale tariff which ISPs can offer to residential end-users covering download speeds of up to 8 Mbit/s, with 16 Mbit/s being rolled out across the Island. The realisable maximum speed is dependent on the distance between the user's premises and the local exchange. The connection charge is £40, with a monthly rental charge of £12.87 exclusive of vat. There is a 10% discount if the ISP assumes responsibility for billing the end-user for this service element resulting in a reduced monthly rental charge of £11.70.

Manx Telecom also has a single ADSL wholesale tariff which ISPs can offer for business end-users covering download speeds of up to 8 or 16Mbit/s, again with a 10% discount if the ISP assumes responsibility for billing. In addition, Manx Telecom offers 3 SDSL products with monthly rental varying dependent on the speed required as detailed in Table 4.3.

Table 4.3: Broadband DSL business access (VAT excluded)

Package	Speed	Connection Charge (£)	Monthly Subscription (£)
ADSL - wires only	16Mb/s	40.00	27.00
ADSL wires plus billing	16Mb/s	40.00	30.00
SDSL	512Kb	£250	£60
SDSL	1Mbit	£250	£75
SDSL	2 Mbit	£250	£90

Access to the incumbent network for ADSL services is provided in similar ways in the comparator countries selected. In some, the pricing of ADSL access is based on the cost to the incumbent of the network elements which make up ADSL access while in a number of other comparator countries, the regime is based on a deduction from the retail price.

In all cases the key competitive issue is whether sufficient margin exists for the alternative operators to make a return on the supply of broadband. The next section examines the margin available in the Isle of Man for alternative operators and ISPs.

Margin available on broadband products

As part of this broadband study PwC conducted interviews with a range of operators offering services on the Isle of Man. PwC also interviewed Manx Telecom as part of the study.

An alternative operator using the Manx Telecom network pays for the cost of using the connection from the customer's site to the main Manx Telecom network and on to the ISP's network on the island. This price excludes the cost of connecting the alternative operators' network to the Manx Telecom network on-island and the cost of circuits to go off-island. These are fixed costs required to ensure internet connectivity for users.

Although there is choice in the supply of off-island access, in reality, based on comments from operator interviews, there is limited choice for products requiring lower capacity. The two main off-island connectors sell capacity in bulk, whereas the third off-island cable managed by e-Ilan Communications provides a range of connectivity options. The alternative ISP has to purchase a circuit to take their internet traffic to a point of presence on the island where it can interconnect with an off-island cable. The operator then also has to pay for capacity on the off-island cables.

The principal issue for operators seeking to interconnect with international internet exchanges is the additional cost of such access, both off-island and on-island circuits. The high degree of fixed costs may make the business case difficult for small operators unless their customer base justifies the purchase of higher capacity – this can be more difficult in a smaller market.

The alternative operator may also control the relationship with the customer and therefore assume the billing and sales support cost. This would also carry a risk for bad debts as consumers may not complete contract terms or fail to pay subscriptions.

Some operators mentioned the need to develop products based on access to Manx Telecom's local loop. In a number of countries, competition has been shown to develop through the unbundling of the incumbent operator's final mile of copper cable. This type of access allows alternative operators to offer differentiated services to customers and is typically taken up by operators with large corporate clients. Access to the local loop could encourage the delivery of more innovative products to corporate clients on the Isle of Man.

Transparency and non-discrimination

A clear, consistent request of all alternative operators interviewed was improved transparency from Manx Telecom on their wholesale pricing. Many of them felt a list of wholesale prices for basic broadband products should be published on the Manx Telecom website. They also felt there was very little advance notice of the launch of new products by Manx Telecom.

Obligations such as transparency and non-discrimination are common in most liberalised telecommunications markets and a process could be agreed between the Communications Commission and Manx Telecom to improve the wholesale offering made by Manx Telecom to encourage competition.

4.5 Conclusions

For Isle of Man consumers there are a range of broadband options at very good speeds and reasonable prices. Access to broadband is not an issue with 100% coverage on the island. The take up of broadband measured against population is in the top tier of global internet countries at 31.7% and ahead of many of its comparator markets.

Competition is limited on the island with a small number of ISP competitors who offer some choice to consumers. With most competitors using the Manx Telecom network, it is only the ISP's service offering which provides the opportunity to differentiate.

Prices of broadband products on the Isle of Man compare well with other comparator countries and contention ratios are also broadly comparable except for the entry level business product. However, connection charges for both business and residential are relatively high and may act as a barrier to higher adoption, particularly at the more cost sensitive end of the market.

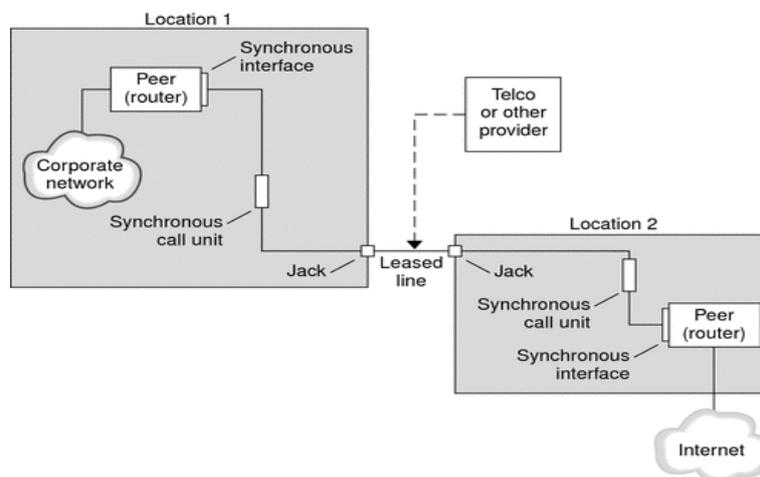
5. Review of the Provision of Private Circuits

5.1 Private Circuits & Leased Line Definitions

Private Circuits, also referred to as Leased Lines, provide dedicated transmission capacity between customer sites, which can be used to carry voice, data and video traffic. At the retail level, Leased Lines are used by businesses and public sector organisations to build their own communications networks. At the wholesale level, Leased Lines are purchased by other operators and can be used as inputs into a wide range of downstream services, including broadband and business connectivity services such as virtual private networks, as well as retail Leased Lines.

In liberalised markets a range of providers offer retail Leased Lines. These may be acquired by providers, who have access to an operator's network and in turn provide leased line services to end-users. In such markets the incumbent operator with the only ubiquitous network offers both wholesale Leased Lines for onward selling by the alternative service provider and retail Leased Lines directly to business users.

Figure 5.1: Graphic display of leased line infrastructure



Leased Lines have been the subject of regulation in the European Union since 1998. Typical regulated products are:

- Wholesale Leased Lines – Leased Lines sold to alternative operators on retail minus basis. These are normally end-to-end circuits;
- Terminating Circuits - are wholesale circuits only for a tail of the end-to-end link and these interconnect with the alternative operators network; and
- Partial Private Circuits – are part circuits which allow the alternative operators to only buy the minimum circuit length and maximise the use of their own network.

In most regulated markets, terminating circuits and partial private circuits are charged at cost oriented prices while wholesale Leased Lines are typically charged at retail prices, minus a margin. In the EU, in addition to pricing obligations, dominant operators typically have non-discrimination and transparency obligations and are often obliged to offer Service Level Agreements (SLAs) to access seekers.

5.2 Benchmark Prices

Benchmarking retail prices for Leased Lines is difficult as most operators bundle the cost of Leased Lines into managed data services which incorporate a range of voice and data services. There are also varying degrees of sophistication in the type of service delivered.

Leased line circuits can be analogue or digital and can be offered across a range of speeds and distances. Businesses would typically require a 2Mb/s circuit to a nearby point of presence (POP). These are typically in-city circuits and are normally no more than 2km in length. The price of a 2Mb/s circuit will differ if the circuit is covering a city to city length. The relative speeds can range from 2Mb/s (although lower speeds are offered, they are becoming less popular) up to 34Mb/s and higher speeds. Leased Lines are typically uncontended access, which means the speed contracted for the circuit is always available, essentially representing a 1:1 ratio. This is particularly important for businesses who may have dedicated file transfer needs. Telecommunications operators do offer contended access which can be more competitively priced if the business customer does not require dedicated capacity at all times.

Ethernet is a technology which allows computers on a network to talk to each other and enables businesses to expand their existing local area networks. Ethernet products are available in some jurisdictions but Ethernet is not generally included in the regulated product portfolio¹⁵.

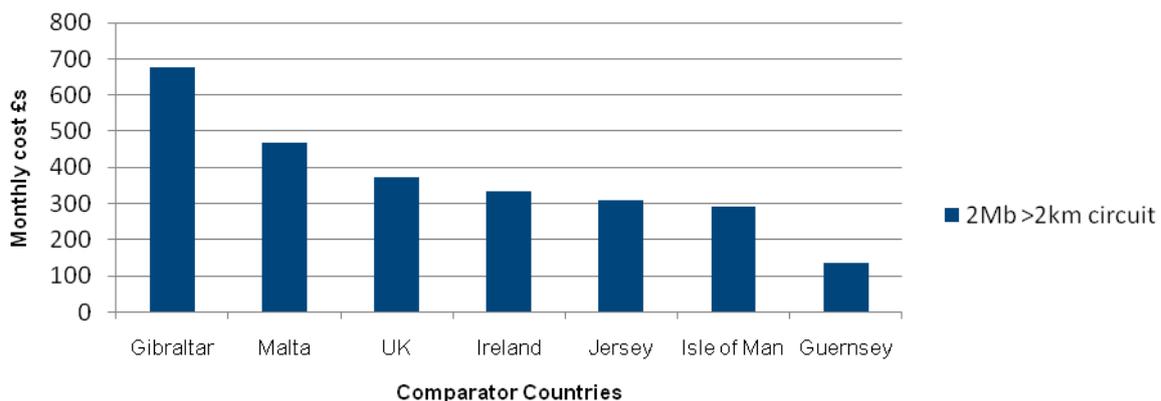
The European Commission published a 'Report on Telecoms Prices Developments' in December 2008 which measured, among other telecommunications products, the costs of national Leased Lines in the European Union¹⁶. The prices compared in this report therefore use the definitions and assumptions agreed in the European Commission report.

The price comparison in Figure 5.2 takes a standard retail 2Mb leased line circuit. This circuit speed would be the most popular for small businesses. The data is taken from the incumbent published tariffs in each location. It is important to restate that in a number of cases the incumbent price may not be the lowest price in the market. It is also assumed that the 2Mb/s circuit is over a 2km distance. This assumption would be particularly important for the Isle of Man and other small island markets where the longer distance circuits don't necessarily apply.

¹⁵ Private circuits have traditionally been delivered as analogue/digital/megaline however Ethernet protocols used typically for indoor LAN use can now be used for fast Leased Lines circuits

¹⁶ European Commission report available from http://ec.europa.eu/information_society/policy/ecomms/index_en.htm

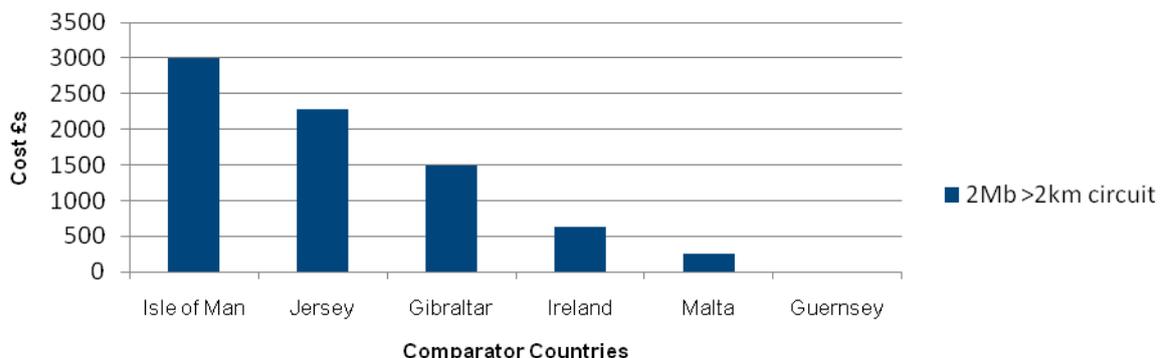
Figure 5.2: Monthly price of 2Mb circuit >2km



The above data shows that for the most popular business circuit, Manx Telecom’s monthly price compares well against most comparator countries. Indeed, the monthly rental charge is lower than that available in Gibraltar, the UK, Malta, Ireland and Jersey, with only Guernsey comparing more favourably.

Figure 5.2 only examines the monthly rental charge. A further consideration on price is the connection charge, if it is applied. For the comparator countries the data is incomplete as BT does not publish a price list with connection charges. Figure 5.3 compares the connection charges for the remaining countries:

Figure 5.3: Connection charges for 2Mb circuit >2km



On the Isle of Man, the issue is similar to that found with residential broadband where the connection charges for Leased Lines are higher than other comparator countries, despite the monthly rental being priced within the range of other comparator countries. Unlike broadband, there is not a tendency in comparator countries, with the exception of Guernsey, to forego connection fees as the costs to the operators are significant to commission a Leased Line. The connection charges are significantly lower in Ireland and Malta which makes the comparative costs of the Manx Telecom circuit appear very high. It is therefore apparent that the connection charge is a significant upfront fee for businesses on the Isle of Man and based on the information gathered represents almost 86% of a full year’s rental.

5.3 Wholesale Access to Leased Lines

The provision of wholesale Leased Lines to alternative operators is pivotal in developing a competitive market for high speed data products, particularly for corporate users. Manx Telecom does not supply wholesale Leased Lines, rather they supply retail Leased Lines at a negotiated discount.

The provision of wholesale Leased Lines should be as transparent as possible with both wholesale prices and retail prices clearly available on the Manx Telecom website. The discount offered to set the wholesale leased line price is currently a matter for negotiation between the licensed operators and it may be preferential that incentives are in place for individual operators to negotiate directly on service levels, speeds and capacity.

Under the European Framework obligations of transparency and non-discrimination are often imposed following a finding of Significant Market Power (equivalent to dominance) in a defined communications markets. These remedies are imposed to protect competitors and consumers against potential abuses of dominant positions.

5.4 Conclusions

From a high level overview of prices, it is clear that Manx Telecom appear to have prices which generally benchmark well with other comparator countries - out the six comparator jurisdictions only Guernsey compared more favourably. The annual rental prices, particularly for the most popular circuits, were also well placed in the previous study conducted by GOS consulting. There is, however, a concern that relatively high connection charges increase the absolute cost of the leased line and represent a high percentage of the first year's rental.

Additional competition in the provision of Leased Lines on the Isle of Man, promoted through wholesale leased line products, would offer a choice to business users which would in turn put pressure on prices and should result in lower connection charges.

Manx Telecom currently offers wholesale circuits at retail prices minus a discount on application. Without a full cost study it is difficult to conclude if this discount reflects the additional costs of retail and it is also difficult on the data reviewed to conclude if this margin would be sufficient for access seekers to differentiate service provision and still be profitable.

Access Seekers, interviewed for this study, were interested in deeper discounts. However, the need for transparency on pricing and non-discrimination is also important. It would be beneficial to develop Service Level Agreements to support such a regime.

6. Conclusions

6.1 Conclusions & Recommendations – Broadband

Conclusions

The availability and speed of broadband in the Isle of Man is commendable given its relative size, population density and topography. Manx Telecom has invested heavily in Next Generation Technologies and is currently rolling out Asymmetric Digital Subscriber Line 2 plus (ADSL2+) in exchanges around the island which will provide speeds up to 16Mb/s. Over the last five years Manx Telecom, has invested in excess of £50m within the island in world class and leading edge communications.

The fact that high speed broadband is available to 100% of households on an island that is, in marketing terms categorised as extra urban and rural, is also worthy of credit. This is especially true when considering that there are many urban communities in the UK and Ireland which are less well served by broadband services and will require government intervention to reach universal availability.

The Isle of Man is within the upper tier of broadband nations with a 31.7% population penetration and a 72.3% household penetration. The European Union's average broadband penetration by population in 2008 was 22.9%, with the best performing member state, Denmark, achieving 37.2%. While, the OECD reported that average broadband penetration by population across OECD countries in December 2008 was 22.3%, with the United States at 25.4%. Isle of Man broadband penetration by population at 31.7% is ahead of the UK at 28% and the Republic of Ireland at 20%. Of the small island comparator countries selected, the Isle of Man is second only to Jersey on penetration as measured by population.

The prices charged for broadband products are also in general reasonably priced compared to other jurisdictions on a monthly basis, although connection charges were higher. When comparing international benchmarks, a key area for improvement however, would be the level of wholesale pricing transparency provided by Manx Telecom. There is insufficient wholesale information available to alternative operators which may impede development in the competitive supply of broadband on the Isle of Man.

Recommendations

PwC would recommend the following actions based on the interviews and desk research conducted as part of this study:

- Manx Telecom should develop and publish a clear set of wholesale prices in a format agreed with the Communications Commission;
- The Commission should conduct a review of connection charges for broadband products and ensure these charges are an accurate reflection of costs; and
- Manx Telecom should be obliged to give advanced notification to customers of price changes on broadband products and the launching of promotions.

The Commission may also wish to investigate demand for Local Loop Unbundling as a number of operators interviewed as part of the research process expressed a desire to gain access to the Manx Telecom's network at the Local Loop level.

A solution to the apparent lack of transparency and non-discrimination issues is normally more effectively implemented via industry wide agreement as opposed to a regulated obligation. The Commission however, could, through its powers under the telecommunications licence initiate an assessment of Significant Market Power which if ascertained could result in additional obligations being imposed on the dominant operator.

6.2 Conclusions & Recommendations – Private Circuits/ Leased Lines

Conclusions

The prices charged for private circuits and international circuits are difficult to compare given the information available from a number of markets. However, it is clear from our analysis that the prices charged by Manx Telecom for the most popular leased line circuits compare well with comparator countries, out competing Gibraltar, the UK, Malta and Jersey. These circuits are the most popular circuits for SMEs and therefore the most sensitive to price.

As with broadband, connection fees appear to be an issue as in some cases they represent 86% of one year's rental charge which is hard to justify on the basis of connection fees recovering the reasonable cost of connection and provisioning. Other jurisdictions had significantly lower connection fees and in the case of Guernsey there was no connection fee.

The inability of alternative operators to access wholesale products was identified as a key issue. Alternative operators are considered the same as corporate users by Manx Telecom which means in all cases, alternative operators find it difficult to compete for corporate business - this is particularly a problem if Manx Telecom's discounts are not transparent.

The need to have resilient network offerings from a number of operators is a key requirement for most multinationals. There is a need to promote a competitive supply of retail Leased Lines circuits on the Island and a clear transparent wholesale regime is required to ensure this competition develops.

Recommendations

PwC would recommend the following actions, in addition to those recommended for broadband, based on the interviews and desk research conducted as part of this study:

- Manx Telecom should develop a clear set of wholesale leased line services and prices which are published on their website in a format agreed with the Communications Commission;
- Manx Telecom should be obliged not to offer any circuit at any speed in the retail space without an equivalent wholesale version available to alternative operators. To facilitate this Manx Telecom should give advanced notification to customers of price/service delivery changes on leased line circuit products prior to the proposed launch date;
- Manx Telecom in conjunction with the Commission and the alternative operators should agree service delivery obligations for private circuits which Manx Telecom will publish at a date to be agreed with the Commission; and
- The Commission should investigate the high levels of connection charges for Leased Lines and consider whether the charges are an accurate reflection of costs.

As discussed in relation to broadband, the Commission could also use its powers under the telecommunications licence to initiate an assessment of Significant Market Power which, if ascertained, could result in additional obligations being imposed on the dominant operator.

7. Glossary

ADSL

Asymmetric Digital Subscriber Line (ADSL) is a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide. It does this by utilizing frequencies that are not used by a voice telephone call. A splitter - or microfilter - allows a single telephone connection to be used for both ADSL service and voice calls at the same time. ADSL can generally only be distributed over short distances from the central office, typically less than 4 kilometres but has been known to exceed 8 kilometres if the originally-laid wire gauge allows for farther distribution.

Broadband

Broadband refers to a signalling method that includes or handles a relatively wide range (or band) of frequencies and transmits a bandwidth of 56 kilobits per seconds (Kbit/s) over a telephone line; over the same telephone line a bandwidth of several megabits per second can be handled by ADSL.

Contention

Most broadband access services share a single connection path between many customers - this is referred to as contention. A contention ratio of 40:1 means that up to 40 customers are sharing the same connection. When usage is light, contention does not pose a problem. However, the quality of the connection can deteriorate if many customers use the connection at the same time. For example, if all 40 users are using a 512Kbps broadband service at the same time, your access speed is reduced to about 13Kbps. In reality, this rarely occurs and is unlikely to significantly impact on your home and internet use, but you should be aware that peak usage times can seem slower because of network congestion. Most of the time, you should be able to connect to 75% - 90% of the top speed available at your location.

Ethernet

Ethernet is a frame-based computer networking technology for local area networks (LANs). The name comes from the physical concept of the ether. It defines a number of wiring and signalling standards for the Physical Layer of the networking model, through means of network access at the Media Access Control (MAC) /Data Link Layer, and a common addressing format.

Internet Service Provider

An Internet service provider (ISP), also called Internet access provider, or (IAP) is a company that offers its customer's access to the Internet. The ISP connects to its customers using a data transmission technology appropriate for delivering Internet Protocol such as dial-up, DSL, cable modem, wireless or dedicated high-speed interconnects.

ISPs may provide Internet e-mail accounts to users which allow them to communicate with one another by sending and receiving electronic messages through their ISPs' servers. (As part of their e-mail service, ISPs usually offer the user an e-mail client software package, developed either internally or through an outside contract arrangement.) ISPs may provide other services such as remotely storing data files on behalf of their customers, as well as other services unique to each particular ISP.

Leased Line

A permanent telephone connection between two points set up by a telecommunications common carrier. Typically, Leased Lines are used by businesses to connect geographically distant offices. Unlike normal dial-up connections, a leased line is always active. The fee for the connection is a fixed monthly rate. The primary factors affecting the monthly fee are distance between end points and the speed of the circuit. Because the connection doesn't carry anybody else's communications, the carrier can assure a given level of quality.

Local Loop

In telephony, the local loop is the physical link or circuit that connects from the customer premises to the edge of the carrier or telecommunications service provider's network. At the edge of the carrier network in a traditional PSTN (Public Switched Telephone Network) scenario, the local loop terminates in a circuit switch housed in a Local Exchange

Megabit per Second (Mbit/s)

In telecommunications, bit rate or data transfer rate is the average number of bits, characters, or blocks per unit time passing between equipment in a data transmission system. This is typically measured in multiples of the units bit per second or byte per second.

Annex A: Country Broadband Packages

Isle of Man

Manx Telecom (August 2009)								
Package Name	Price (£) per month	Minimum Term (months)	Advertised Maximum Download Speed (Mb/s)	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per additional data (where applicable)	Part of a Bundle	Connection Charge (£)
Residential								
Broadband 10GB	18.55	12	16	50:1	10GB	Cap Release Fee £14.68	No	46
Broadband 20GB	22.46	12	16	50:1	20GB	Cap Release Fee £11.74	No	46
Broadband Unlimited	28.33	12	16	50:1	n/a	n/a	No	46
Business								
Broadband Lite	Wires Only: £35	12	16	50:1	n/a	n/a	No	Wires Only: £40
	Managed: £45							Managed: £240
Broadband Business	Wires Only: £55	12	16	20:1	n/a	n/a	No	Wires Only: £40
	Managed: £65							Managed: £240
Broadband Business SDSL 512Kb	Wires Only: £109		512Kb	zero contention	n/a	n/a	No	Wires Only: £250
	Managed: £119							Managed: £575
Broadband Business SDSL 1Mb	Wires Only: £209		1Mb	zero contention	n/a	n/a	No	Wires Only: £250
	Managed: £219							Managed: £575
Broadband Business SDSL 2Mb	Wires Only: £304		2Mb	zero contention	n/a	n/a	No	Wires Only: £250
	Managed: £314							Managed: £575

WiManx (August 2009)								
Package Name	Price (£) per month	Minimum Term (months)	Advertised Maximum Download Speed (Mb/s)	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per additional data (where applicable)	Part of a Bundle	Connection Charge (£)
Residential								
Broadband Lite	17.57	6	16	50:1	connection speed reduced to 64k	n/a	No	46
Broadband Unlimited	24.47	6	16	50:1	n/a	n/a	No	46
Business								
Business Lite	Wires Only: £25.52	6	2Mb/s or 512Kb/s	50:1	n/a	n/a	No	40
Business Plus	Wires Only: £55	6	2Mb/s or 512Kb/s	20:1	n/a	n/a	No	40
SDSL 1024	Wires Only: £185	6	1Mb/s	10:1	n/a	n/a	No	250
	Managed: £195							
SDSL 2048	Wires Only: £265	6	2Mb/s	10:1	n/a	n/a	No	250
	Managed: £275							
Wireless Internet (WiMAX)	150	6	1	10:1	n/a	n/a	No	650
	225		2					
	325		3					
	425		4					

Channel Islands - Jersey

Jersey Telecom – Residential

Package Name	Price £ (per month)	Advertised Maximum down/up speed	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per MB additional data	Part of a Bundle	Comments
Rapid 20GB	£17.99	Up to 2Mbit/s	50:1	20GB	n/a	No	Occasional monthly use in excess of the relevant usage allowance is acceptable.
Rapid 40GB	£24.99	Up to 2Mbit/s	50:1	40GB	n/a	No	
Rapid 60GB	£34.99	Up to 2Mbit/s	50:1	60GB	n/a	No	

Jersey Telecom – Business

Package Name	Price £ (per month)	Advertised Maximum down/up speed	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per MB additional data	Part of a Bundle
Rapid Business (ADSL) 40GB	£35.99	Up to 2048Kbit/s downstream, 512Kbit/s upstream	20:1	40GB	n/a	No
Rapid Business (ADSL) 60GB	£49.99	Up to 2048Kbit/s downstream, 512Kbit/s upstream	20:1	60GB	n/a	No
Rapid Business (ADSL) Unlimited	£74.99	Up to 2048Kbit/s downstream, 512Kbit/s upstream	20:1	Unlimited	n/a	No

Self-install at £50 is available but not to customers renting routers from Jersey Telecom. Jersey Telecom Installation & Configuration charge is £130. Single fixed IP address as standard. Multiple IP addresses are available for an additional charge. Extra cost if installation of fixed phone line required. Additional connection speed profiles which can be employed to ensure the greatest network coverage and provide service on lines that cannot reliably support the maximum 2048/512Kbit/s service:

- 1024Kbit/s down, 384Kbit/s up
- 512Kbit/s down, 256Kbit/s up
- 256Kbit/s down, 128Kbit/s up

*All prices exclude GST

Channel Islands – Guernsey

Sure - Residential

Package Name	Price £ (per month)	Advertised Maximum down/up speed	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per MB additional data	Part of a Bundle	Comments
Anytime broadband	£24.99	Up to 2Mb down/ 256Kb up	40/1	No download limit	-	No	
Pay as you go	£14.99.	Up to 2Mb	40/1	300 free minutes of browsing	Extra minutes are charged at 3p to a maximum of £34.99 - service then becomes unlimited for the remainder of the month.	No	Free USB Modem

Sure – Business

Package Name	Price £ (per month)	Advertised Maximum down/up speed	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per MB additional data	Part of a Bundle
Sure Pro 4Mb	£24.99 per month for the first three months; £49.99 per month thereafter	4Mb down/ 512Kb up	20/1	No download limit		No
Sure Pro 8Mb	£39.99 per month for the first three months; £79.99 per month thereafter	Up to 8Mb down/ 768Kb up	20/1	No download limit	-	No

5 Usable (+£20 a month): 5 public facing internet IP addresses routed through the broadband router. IP addresses will not change.

13 Usable (+£25 a month): 13 public facing internet IP addresses routed through the broadband router which These IP addresses will not change.

Routers:

- Basic router (dynamic IP addressing only) (free)
- Cisco 857 (+£395)
- Cisco 877W (+£583.26)

Gibraltar

Gibtelecom – ADSL WOW* (Residential & Business)

Package Name	Price £ (per month)	Advertised Maximum down/up speed	Data Cap (where applicable)	Cost per MB additional data	Part of a Bundle	Comments
WOW Standard	Gibwireline: £12 Gibconnect: £12 Total= £24	1Mbps/ 512kbps	15MB	n/a	No	Free connection fee (includes USB modem and 1 filter) 5 email addresses
WOW Standard Plus	Gibwireline: £37 Gibconnect: £17 Total= £54	2Mbps/ 512kbps	50MB	n/a	No	Free connection fee (includes USB modem and 1 filter) 25 email addresses, Web statistics included Domain hosting included
WOW Enhanced	Gibwireline: £54 Gibconnect: £40 Total= £94	8Mbps/ 768kbps	50MB	n/a	No	Free connection fee (includes USB modem and 1 filter) 25 email addresses Web statistics included Domain hosting included

*WOW 'Wideband over Wires' is Gibtelecom's ADSL (Asymmetric Digital Subscriber Line)

Gibtelecom – Internet Corporate Links (Business)

Package Name	Price £ (per month)	Data Cap (where applicable)	Cost per MB additional data	Part of a Bundle	Comments
64 kbps	Gibwireline: £144 Gibconnect: £135 Total= £279	50MB	n/a	No	One-off Installation Fee=£1,500 24 x 7 technical support Presentation on an Ethernet port of a CISCO router Domain hosting 16 IP addresses Online web statistics
128 kbps	Gibwireline: £270 Gibconnect: £240 Total= £510	50MB	n/a	No	
256 kbps	Gibwireline: £360 Gibconnect: £440 Total= £800	50MB	n/a	No	
512 kbps	Gibwireline: £495 Gibconnect: £800 Total= £1,295	50MB	n/a	No	
1 Mbps	Gibwireline: £585 Gibconnect: £1,450 Total= £2,035	50MB	n/a	No	
2 Mbps	Gibwireline: £675 Gibconnect: £2,600 Total= £3,275	50MB	n/a	No	

Republic of Ireland

Eircom broadband – Residential and Business

Package Name	Price € (per month)	Advertised Maximum down/up speed	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per MB additional data	Part of Bundle	Comments
Home Professional	48.60	7.6MB/ 672kbps	24:1	50GB	1c per MB	No	Free Wi-Fi (until March 31, 2009)
Home Advanced	40.16	7MB/ 384kbps	48:1	50GB	1c per MB	No	Free 5GB online storage
Home Plus	30.11 <i>(Special offer: €25.09 for first 3 months available to new and upgrading customers)</i>	3MB/ 384kbps	48:1	30GB	1c per MB	No	Free Setanta Sports online
Home Starter	25.09 <i>(Special offer: €25.09 for first 3 months available to new and upgrading customers)</i>	1MB/ 128kbps	48:1	10GB	1c per MB	No	Free Norton Security for 3 months Free wireless modem (worth €99.40 – for first time Eircom broadband connections only)
							Free Digital Photo Prints Free connection (worth €29.99)

Under the regulatory regime in Ireland, Eircom cannot offer better deals to residential or business users, for example free extras and differing speeds. Instead, they tend to offer standard speeds and packages to both residential and business users, with the latter paying prices which exclude VAT (21.5%).

Malta

GO – Residential broadband

Package Name	Price € (per month)	Advertised Maximum down/up speed	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per MB additional data	Part of a Bundle	Comments
Go Plus: 2Mbps	€13.86	2MB / 512Kbps	-	25GB	-	-	30 Days free Free activation
Go Plus: 8Mbps	€23.18	8MB / 512Kbps	-	100GB	-	-	3 additional email boxes
Go Plus: 12Mbps	€32.26	12 MB / 512Kbps	-	150GB	-	-	100MB mail box space Anti-virus protection
Go Plus: 20Mbps	€70.00	20MB / 1MB	-	Unlimited	-	-	Free use of modem 100MB webspace Anti-spam protection Free unmetered downloads during off peak hours

GO – Business broadband

Package Name	Price € (per month)	Advertised Maximum down/up speed	Contention Ratio (where advertised)	Data Cap (where applicable)	Cost per MB additional data	Part of Bundle	Comments
Go Business: 2Mbps	€11.75	2MB / 512Kbps	n/a	25GB	n/a	No	Free Nokia 2680 slide Free Static IP Free use of modem Free activation 24x7 telephone support Four email boxes 100MB mail box quota Anti-virus protection Anti-spam protection
Go Business: 8Mbps	€29.60	8MB / 512Kbps	n/a	150GB (special offer – normal limit is 100GB)	n/a	No	[Special offer for 8Mbps package only: Free Nokia 6120 Classic OR Sony Ericsson K770j] Free Static IP
Go Business: 12Mbps	€52.71	12 MB / 512Kbps	n/a	Unlimited	-	No	Free use of modem Free activation 24x7 telephone support
GoBusiness: 20 Mbps	€59.32	20MB / 1MB	n/a	Unlimited	-	No	20 email boxes

United Kingdom

British Telecom Broadband Only

Package Name	Price £ (per month)	Advertised Maximum down/up speed	Data Cap (where applicable)	Cost per MB additional data	Comments
Option 1 Fast & Reliable	£7.78 for 3 months, £15.65 thereafter (18 month contract) OR £15.65 per month (12 month contract)	8MB / -	10GB	58p per GB	BT Home Hub included Basic Security Free 5GB online storage 250 Wi-Fi minutes per month
Option 2 Heavy Usage	£13.69 for 3 months, £20.54 thereafter (18 month contract) OR £20.54 per month (12 month contract)	8MB / -	15GB	58p per GB	BT Home Hub included Advanced McAfee Security Free 5GB online storage 350 Wi-Fi minutes per month
Option 3 Unlimited	£18.59 for 3 months, £24.46 thereafter (18 month contract) OR £24.46 per month (12 month contract)	8MB / -	Unlimited	-	BT Home Hub included BT Hub Phone included Advanced McAfee Security Free 5GB online storage Unlimited Wi-Fi minutes per month
Option 4 Anywhere	£23.48 for 3 months, £29.35 thereafter (18 month contract)	8MB / -	Unlimited	-	BT Home Hub included, BT Hub Phone included BT ToGo* included, Advanced McAfee Security Free 5GB online storage Unlimited Wi-Fi minutes per month BT Smart ToGo mobile phone included Low Cost to mobiles

The BT Heavy Usage package, less VAT, is the business package used in the calculations contained in this report.

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