

# 5 Telecoms and networks

## 5.1 Recent developments in Scotland

### *Scotland's Digital Future*

On 31 January 2012 the Scottish Government published *Scotland's Digital Future: Infrastructure Action Plan*<sup>17</sup>, setting out a blueprint for world-class digital connectivity that the government said would allow Scottish society to prosper fully: economically, socially and culturally, in the digital age. The public sector has already secured over £250m for delivery of the digital connectivity targets set out in the plan.

The action plan outlined the commitment and the steps the Scottish Government will take to pursue its objectives:

It will provide a transformational change in the quality and coverage of internet and mobile access throughout all of Scotland by 2020, with a step-change in speeds by 2015.

It will facilitate the roll-out of digital infrastructure that will deliver benefits in terms of speed, ease of access, geographical coverage, price and choice of provision for households and businesses.

It will keep pace with, and surpass, international benchmarks in delivery of next-generation broadband.

The action plan set out four programmes:

**Programme 1 – Achieving a step-change by 2015:** To address the current digital divide and put in place infrastructure in those areas that the market currently will not go, with headline speeds of 40Mbit/s to 80Mbit/s for between 85% to 90% of premises and a significant uplift in speeds for the remaining 10-15% by 2015. These targets will be delivered through two closely-related procurements: one in the Highlands and Islands, and a separate one for the rest of Scotland. The Highlands and Islands project - originally one of the four BDUK pilot projects (and the only one in Scotland) is being led and managed by Highlands and Islands Enterprise. Procurement started in June 2011 and the contract is expected to be agreed in August 2012. A second procurement exercise, covering the rest of Scotland, is currently being taken forward by the Scottish Government. This will go to tender in September 2012, with a contract award expected in early 2013.

**Programme 2 – Achieving world-class by 2020:** To deliver a longer-term plan, developed in parallel, to ensure that the right mechanisms, partnerships and commercial models are in place to deliver world-class infrastructure in a sustainable way and in partnership with industry.

**Programme 3 – Demonstrating and delivering innovative and local solutions:** This will be targeted at promoting locally-based projects and programmes and trialling new technologies.

**Programme 4 – Increasing take-up and stimulating demand:** This will be targeted at raising digital participation rates for businesses and individuals and raising demand for services – helping to improve the commercial case for investment and delivering better outcomes for Scotland.

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<sup>17</sup> <http://www.scotland.gov.uk/Publications/2012/01/1487/0>

## Mobile infrastructure

The aim of the UK Government's £150m Mobile Infrastructure Project is to improve mobile coverage across the UK including Scotland. The focus is on voice coverage and complete not-spots.

### 'Super-connected' cities

In December 2011 the UK government announced a plan to create ten 'super-connected' cities across the UK, maximising the availability of 80Mbit/s to 100Mbit/s broadband connectivity and city-wide high-speed mobile connections. There will be a particular focus on small and medium-sized enterprises (SMEs) and strategic employment zones, to support economic growth in these cities, and it was announced that Edinburgh would be one of the cities to benefit.

### Service providers

BT is currently rolling out its superfast fibre broadband network, and by April 2012 over 300,000 homes and businesses in Scotland were within this network's 'live' footprint. According to BT's deployment plans, this figure will have increased to over 830,000 by spring 2013.<sup>18</sup>

In addition, parts of Scotland have also benefited from the roll-out of BT's ADSL2+ broadband service, which delivers wholesale download speeds of 'up to' 20Mbit/s over copper lines.<sup>19</sup> As of April 2012 64% of people in Scotland lived in areas served by exchanges which had been upgraded, and by the end of 2012 this proportion will have increased to 73%.

Dundee and Glenrothes, where services were upgraded in March and April 2012, were among the first areas to benefit from faster cable broadband speeds as part of Virgin Media's programme to double the speeds of most of its cable broadband connections.<sup>20</sup>

## 5.2 Availability of broadband services

### ADSL availability in Scotland was slightly lower than in the other UK nations at the end of 2011

By the end of 2011 almost all UK homes were connected to an ADSL-enabled BT local exchange, although some people may not be able to receive ADSL broadband services, or may only be able to do so at very slow speeds, as a result of the long length or poor quality of the copper telephone line from their premises to the local exchange. Of BT's 5,589 local exchanges only 26 (20 in Scotland, and six in England) had not been upgraded to offer ADSL broadband services by the end of 2011, and as a result the proportion of homes connected to an ADSL-enabled BT exchange was marginally lower in Scotland than in the rest of the UK (Figure 5.1).

Local loop unbundling (LLU) involves an alternative operator placing its own equipment in the incumbent's local exchange. This is then connected to the LLU provider's own backhaul network, and ADSL broadband services are provided over the twisted copper pair, which is

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<sup>18</sup> <http://www.btplc.com/News/Articles/Showarticle.cfm?ArticleID=C7CB8FCA-8F01-449A-AECD-608E0A6329BB>

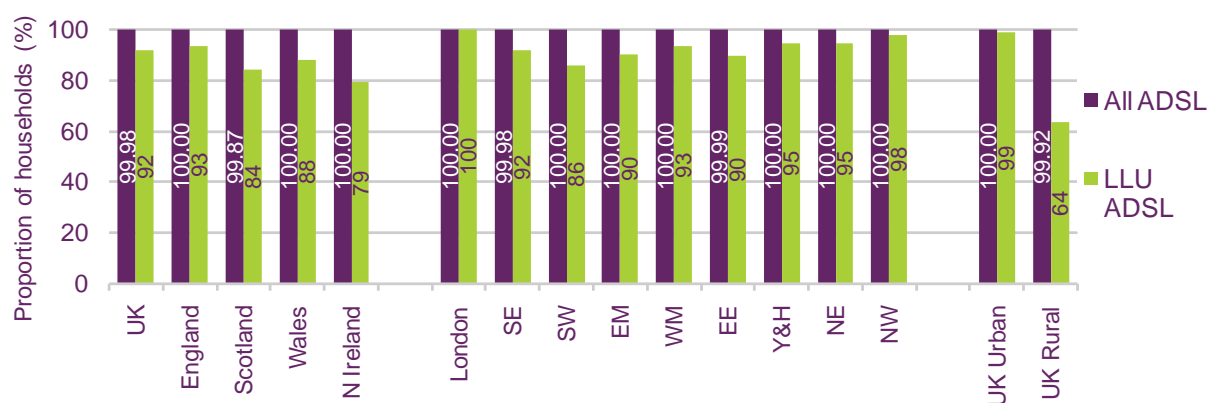
<sup>19</sup> <http://www.btplc.com/news/articles/showarticle.cfm?articleid=%7Ba4a686af-92e3-4c7c-8b83-fadc2cf1b961%7D>

<sup>20</sup> <http://mediacentre.virginmedia.com/Stories/Virgin-Media-s-speed-doubling-starts-2380.aspx>

leased from the incumbent operator. LLU operators are able to benefit from economies of scale which are not available to them when purchasing wholesale services on a per-unit basis, and have greater opportunity to differentiate the services that they offer from their competitors'. As a result, consumers living in LLU-enabled exchange areas are likely to have a greater choice of ADSL broadband services and, typically, access to lower-cost (particularly bundled) services.

At the end of 2011 92% of UK homes were connected to an LLU-enabled BT exchange, a three percentage point increase on a year previously. LLU roll-out has historically been concentrated in exchange areas serving a large number of premises (which tend to be in urban areas) and as a result of this the proportion of homes connected to an LLU-enabled local exchange is much higher in urban areas (99%) than in rural ones (64%). Scotland had the second lowest proportion of households connected to an LLU-enabled exchange at the end of 2011, at 84%; across the other UK nations this proportion ranged from 79% in Northern Ireland to 93% in England.

**Figure 5.1 Proportion of homes connected to ADSL-enabled and unbundled exchanges: December 2011**



Sources: Ofcom/BT, December 2011 data

**Scotland had the second-highest household availability of cable broadband services in May 2012, at 35%**

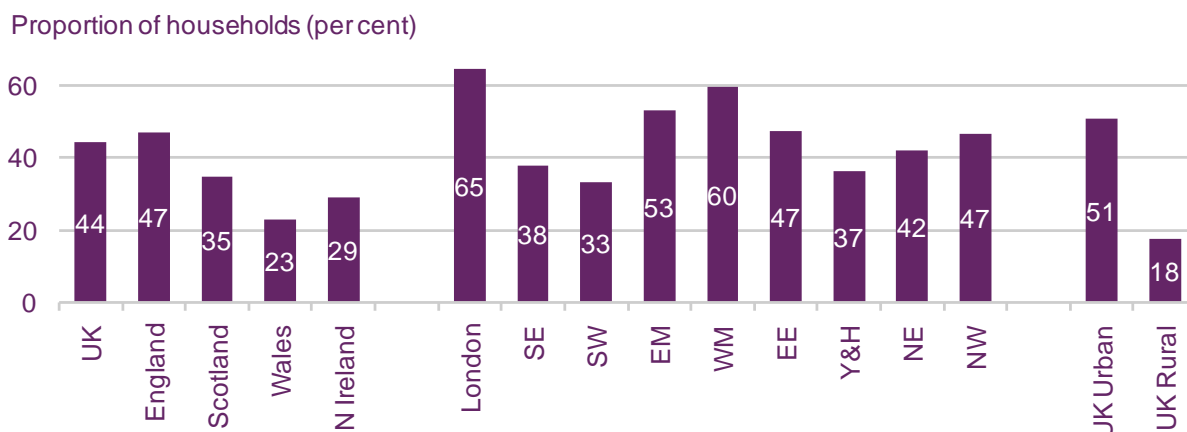
Ofcom estimates (based on data provided by Virgin Media) show that 44% of UK homes were passed by Virgin Media's cable broadband network in May 2012. However, this figure will be under-stated as it excludes homes where Virgin Media is not also able to provide fixed voice and pay-TV services (Figure 5.2).<sup>21</sup>

As with the roll-out of LLU broadband services, the original cable franchisees concentrated network deployment in urban areas in order to maximise the number of premises covered by their networks (and therefore their potential customer bases). This is reflected below, with household coverage in urban areas being 51%, compared to 18% in rural areas. Across the UK nations, the proportion of homes passed by Virgin Media's cable broadband network ranged from 23% in Wales to 47% in England, while in Scotland 35% of homes could receive Virgin Media cable broadband services, the second highest proportion among the UK nations.

<sup>21</sup> While the most recent data available to Ofcom show that 44% of UK homes were able to receive triple-play cable services from Virgin Media in May 2012, data from 2010 show that in total 48% of UK homes were able to receive Virgin Media cable broadband in June of that year.

All of Virgin Media's cable network is able to provide broadband speeds of 'up to' 100Mbit/s and in January 2012 Virgin announced that it was doubling the speeds of most of its broadband connections in the 18 months from February 2012, thereby increasing the speed of its fastest package to 'up to' 120Mbit/s<sup>22</sup>.

**Figure 5.2 Proportion of households passed by Virgin Media broadband**



Sources: Ofcom/Virgin Media, May 2012 data

Note: excludes homes where Virgin Media is not also able to provide fixed voice and pay-TV services

### Household fibre-to-the-cabinet availability in Scotland was the lowest among the UK nations in March 2012, at 10%

Fibre-to-the-cabinet (FTTC) involves running fibre optic cable from the local exchange to the street cabinet, from which VDSL (a fast form of DSL) is used to transmit data over the twisted copper pair to the customer's premises. Figure 5.3 shows Ofcom estimates of the proportion of UK homes that were able to receive BT FTTC services by March 2012 (there are other FTTC deployments, the most notable of which is South Yorkshire Digital Region, which covers around 440,000 premises in the South Yorkshire area).<sup>23</sup>

BT is currently in the process of rolling out FTTC services, and this is reflected by the fact that in the year to March 2012 our estimate of the proportion of homes able to receive BT FTTC services (or services using BT's FTTC network) increased by 15 percentage points to 31% (these estimates have been adjusted to take into account the fact that not all street cabinets connected to an exchange that has been upgraded to offer FTTC have fibre run to them). BT's FTTC service had a headline speed of 'up to' 40Mbit/s at launch, and in April 2012 it upgraded its FTTC network to offer 'up to' 80Mbit/s.<sup>24</sup>

By March 2012 35% of homes in urban areas of the UK were able to receive BT FTTC services, more than twice the proportion in rural areas (15%). Scotland had the lowest estimated proportion of homes that were able to receive FTTC services from BT, at 10%, while FTTC availability was highest in Northern Ireland, at 87%; the result of a Department of Enterprise, Trade and Investment (DETI) initiative to increase the availability of fibre-based broadband services.

BT is also deploying fibre-to-the-premises (FTTP) services, and by the end of 2011 its FTTP network, which offers speeds of 'up to' 110Mbit/s, covered around 50,000 UK homes.<sup>25</sup> BT

<sup>22</sup> <http://mediacentre.virginmedia.com/Stories/Virgin-Media-boosts-Britain-s-broadband-speeds-2322.aspx>

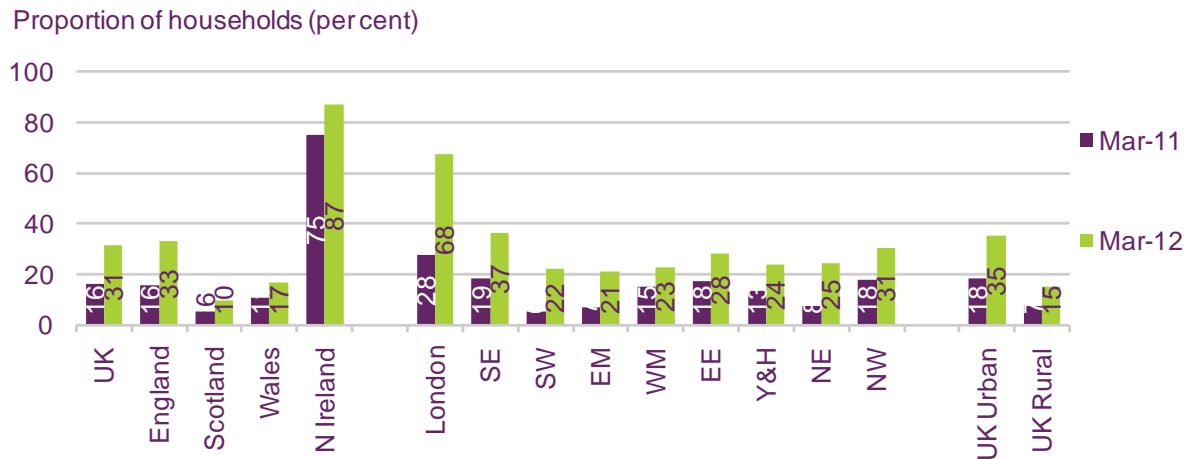
<sup>23</sup> <http://www.digitalregion.co.uk/digital-region-wholesale/the-networkrollout>

<sup>24</sup> <http://www.btplc.com/News/ResultsPDF/q411release.pdf>

<sup>25</sup> [http://www.btplc.com/Sharesandperformance/Quarterlyresults/PDFdownloads/q312\\_transcript.pdf](http://www.btplc.com/Sharesandperformance/Quarterlyresults/PDFdownloads/q312_transcript.pdf)

intends to make its superfast broadband services available to two-thirds of UK premises using a mixture of FTTC and FTTP, and in October 2011 it announced that this goal would be attained by the end of 2014, a year sooner than originally planned.<sup>26</sup>

**Figure 5.3 Estimated proportion of households able to receive BT FTTC services**



Sources: Ofcom/BT

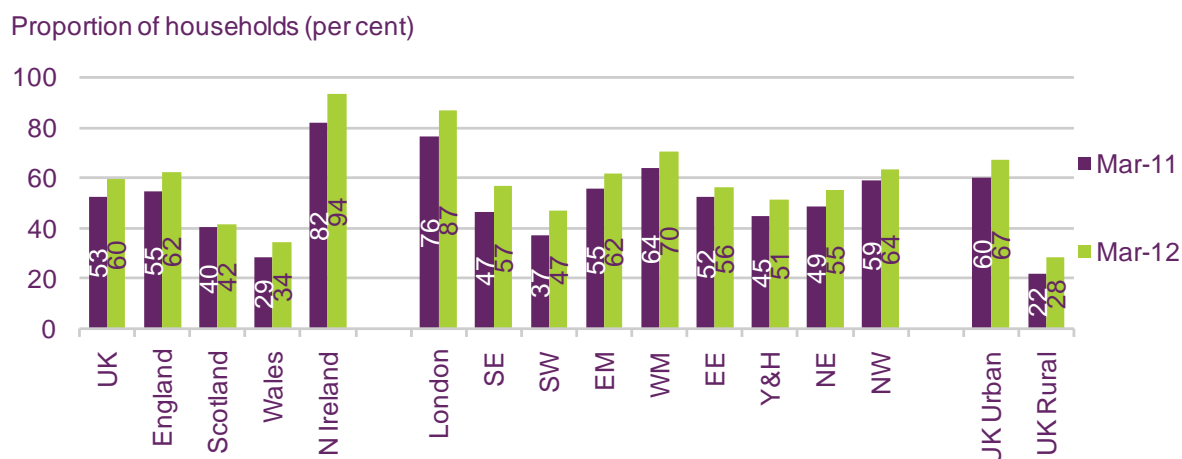
**Forty-two per cent of homes in Scotland could access superfast broadband services by March 2012**

Superfast broadband is defined as those connections with a headline ‘up to’ speed of 30Mbit/s or more, and by overlaying Virgin Media cable broadband availability data onto that of BT’s FTTC network we are able to estimate the overall availability of superfast services. Again it should be noted that the figures below will be slightly under-stated as they exclude BT’s FTTP network, homes where Virgin Media is not also able to provide fixed voice and pay-TV cable services, and other smaller-scale fibre deployments.

We estimate that by March 2012 60% of UK homes were able to receive superfast broadband services, up from 53% a year previously; largely as a result of BT’s ongoing FTTC roll-out (Figure 5.4). Household availability of superfast broadband in rural areas (28%) was less than half of that in urban areas (67%) by March 2012, and across the UK nations the household availability of superfast services was lowest in Wales (34%) and highest in Northern Ireland (94%). In Scotland 42% of homes were able to receive superfast broadband services by March 2012, the second lowest proportion among the UK nations.

<sup>26</sup> <http://www.btplc.com/news/articles/showarticle.cfm?articleid=%7Bd228f2b4-25fc-4095-8ec4-bd17b903cc3b%7D>

**Figure 5.4 Estimated proportion of households able to receive superfast broadband services**



Sources: Ofcom/BT/Virgin Media

### 5.3 Mobile coverage

#### Mobile coverage available to 99% of premises in Scotland – with 94% able to access 3G

Although 92% of UK adults have a mobile phone, according to Ofcom’s market research, there remain areas of the country where a lack of network coverage means that making mobile phone calls, sending text messages or accessing the internet from a mobile device is not possible. These areas, sometimes known as ‘mobile not-spots’, are often characterised by low population density and/or undulating terrain, presenting physical and economic obstacles that may deter mobile network operators from installing mobile phone masts in those areas.

In other areas of the UK, some operators have installed masts and provide a mobile service where other operators do not have a presence, leading to the creation of partial not-spots.

Figure 5.5 and Figure 5.6 detail levels of mobile coverage based on premises (homes and offices) for 2G and 3G services respectively. 3G is often considered to be the minimum necessary to provide a satisfactory experience of mobile internet, while 2G is satisfactory for telephone calls and text messaging.

#### How we measure the availability of mobile telephony in this report

The coverage information presented in Ofcom’s *Communications Market Report*, *Nations and Regions reports* and *Infrastructure Report* is collected by Ofcom from the four mobile network operators. Information on coverage is provided by each operator for each 200x200metre pixel of landmass across the UK. This information is correlated with maps of premises to give the premises coverage figures. This new methodology is different to that used in previous *Communications Market Reports* and therefore figures should not be compared with previous years.

Figure 5.5 shows that, across the UK, 93.6% of premises have coverage outside the building from all three 2G network operators (Everything Everywhere, O2 and Vodafone). A small proportion of premises in the UK – 0.3% - do not have 2G coverage from any operator.

3G coverage is less prevalent, with 77.3% of UK premises having coverage from all operators (including Three) outside the building. Just under 1% of premises have no 3G coverage from any operator.

These figures all refer to outdoor coverage. Coverage figures for indoor reception are likely to be lower because radio signals are attenuated as they pass through the fabric of buildings. Indoor reception is highly dependent on the building in which reception is desired and where the user is located in the building. This makes it difficult to calculate indoor coverage figures.

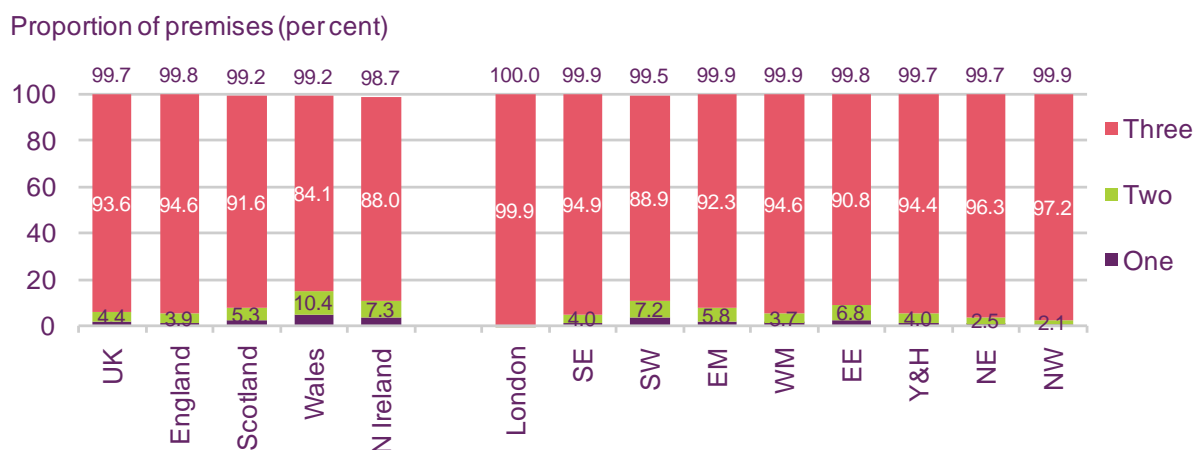
Compared with the UK average (93.6%), fewer of Scotland's premises have mobile coverage from all three 2G operators: at 91.6%, although this is higher than in Wales (84.1%) and Northern Ireland (88.0%). Scotland's 3G coverage is also lower than the UK average, at 68.0% premises coverage for all 3G operators, but is again higher than in Wales (52.4%) and Northern Ireland (55.9%).

The lower network coverage in Scotland, compared to England, is a reflection of the country's hilly terrain that restricts reception of mobile signals, and its lower population density which makes mobile coverage less commercially viable.

Expressed in terms of geographical area, coverage figures are much lower, because mobile masts are more commonly installed near centres of population. 12.8% per cent of the UK area is not covered by any 2G signal, and 24.2% of the UK area is not covered by any 3G signal.

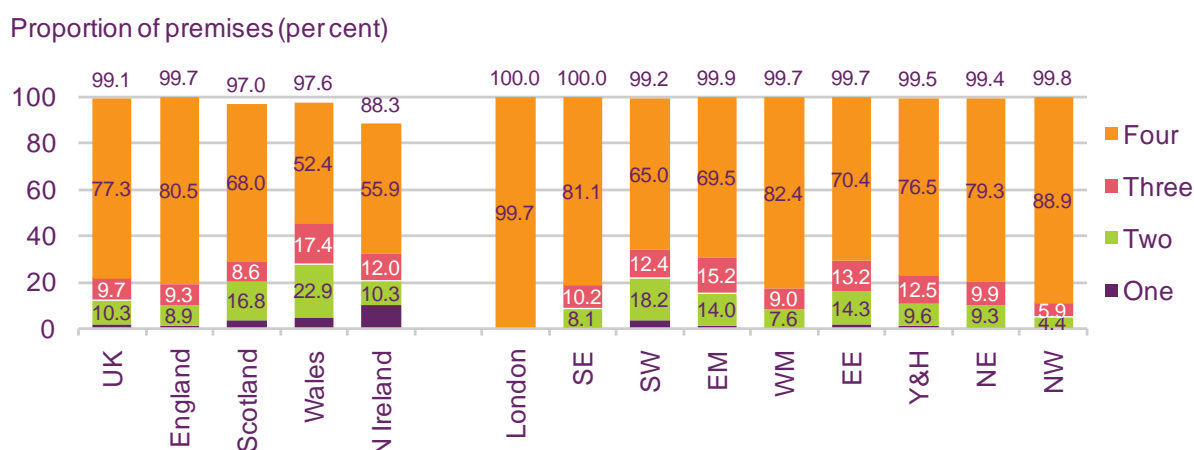
Because of its large geographic areas with low population density, over one-quarter (27.5%) of the area of Scotland has no 2G mobile coverage from any operator, which is the highest of the four nations.

**Figure 5.5 2G premises mobile coverage, by number of operators**



Source: Ofcom, based on operator data. Coverage is based on 200m square pixels covering the UK using an enhanced methodology. Therefore data are not comparable to those published in the 2011 Communications Market Report.

**Figure 5.6 3G premises mobile coverage, by number of operators**



Source: Ofcom, based on operator data. Coverage is based on 200m square pixels covering the UK using an enhanced methodology. Therefore data are not comparable to those published in the 2011 Communications Market Report.

## 5.4 Service take-up

### Levels of mobile use were lower than average in Scotland in Q1 2012

Figure 5.7 compares the take-up of communications services in Scotland and the other UK nations in Q1 2012 to the UK average.

While the proportion of homes which used fixed telephony services in Scotland (82%) was in line with the other UK nations during this period, the proportion of people who owned a mobile phone (85%) was lower than the UK average of 92%. As is the case across the UK, the proportion of adults using a smartphone increased significantly in Scotland in the year to Q1 2011 (up from 21% to 32%), but this was lower than the UK average (39%).

As discussed in Section 2.4, broadband take-up in Scotland has increased in the past year and tablet computers have been purchased by one in ten adults.

**Figure 5.7 Take-up of communications services, 2012**

	UK	Scotland	England	Wales	N Ireland	Scotland urban	Scotland rural
<b>Individual</b>							
<b>Voice telephony</b> Fixed Line	84%	82%	85%	80%	80%	81%	87%
Mobile phone	92%	85%	93%	92%	93%	84%	89%
Smartphone	39%	32%	40%	39%	34%	33%	32%
<b>Internet</b> Computer (any type)	79%	70%	80%	71%	73%	68%	78%
Tablet computer	11%	11%	11%	8%	9%	11%	10%
Total Internet	80%	71%	81%	74%	73%	69%	79%
Broadband (fixed and mobile)	76%	68%	78%	68%	69%	67%	76%
Fixed Broadband	72%	64%	73%	63%	66%	63%	72%
Mobile Broadband	13%	12%	13%	16%	7%	11%	17%

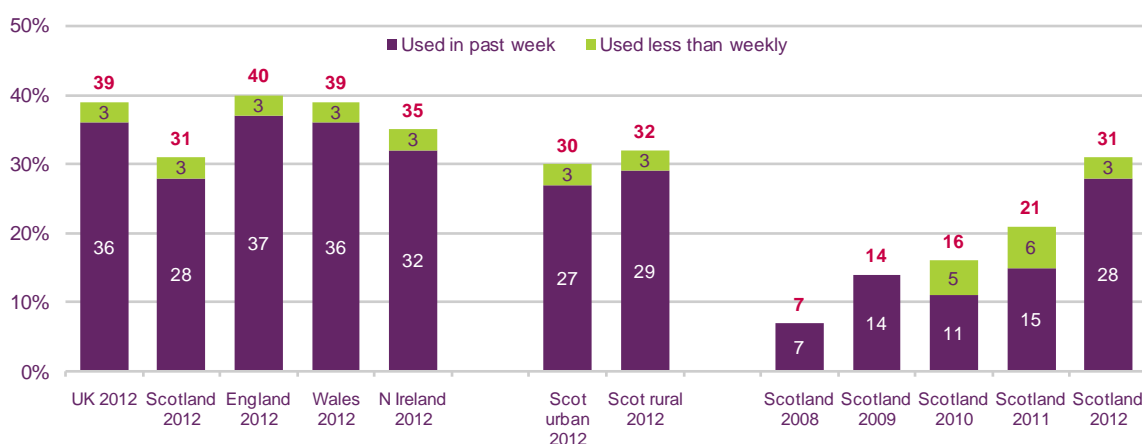
Source: Ofcom research, Q1 2012 Base: All adults aged 16+ (n = 3772 UK, 500 Scotland, 2251 England, 513 Wales, 508 Northern Ireland, 264 Scotland urban, 236 Scotland rural) Question: various.



## Use of a mobile phone to access the internet increased in the year to Q1 2012 in Scotland, but was still lower than average

Three in ten adults in Scotland (31%) said that they had used a mobile phone to access the internet in Q1 2012, the majority of these saying that they had done so within the previous week (Figure 5.8). Although use of a mobile phone to access the internet in Scotland was less common than in all of the other UK nations, the proportion of people doing increased from 21% to 31% in the year to Q1 2012, indicating that use in Scotland is catching up with the other UK nations. Three per cent of households in Scotland used smartphones as their sole internet connection in Q1 2012, unchanged from a year previously.

**Figure 5.8 Use of a mobile phone to access the internet**

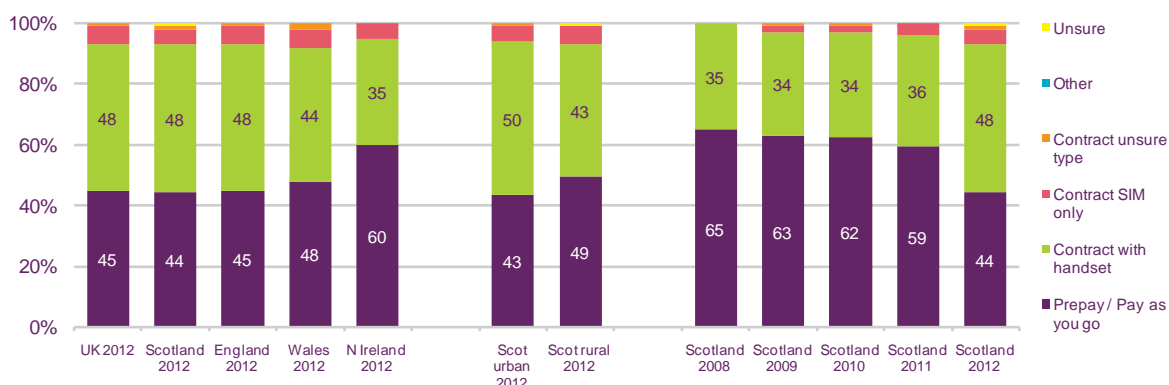


Source: Ofcom research, Q1 2012 Base: All adults aged 16+ (n = 3772 UK, 500 Scotland, 2251 England, 513 Wales, 508 Northern Ireland, 264 Scotland urban, 236 Scotland rural, 925 Scotland 2008, 1014 Scotland 2009, 1468 Scotland 2010, 487 Scotland 2011, 500 Scotland 2012) Question: Which, if any, of the following activities, other than making and receiving calls, do you use your mobile for?/ And, which of these activities have you used your mobile for in the last week? (NB 2008 and 2009 surveys did not cover use in past week – 2008 and 2009 measures show any use)

## Most mobile connections were post-pay contracts in Q1 2012

In common with the UK trend, many pre-pay mobile phone users in Scotland migrated onto monthly contracts in the year to Q1 2012, making monthly contracts the most common method of purchasing mobile telephony services during the period (Figure 5.9). The shift has been driven by increased take-up of monthly contracts that include a handset (the proportion using these increased from 36% in Q1 2011 to 48% in Q1 2012). This is likely to be related to increasing take-up of smartphones, as post-pay services allow consumers to spread the high up-front cost of the handset across the length of their contract.

**Figure 5.9 Type of mobile subscription**



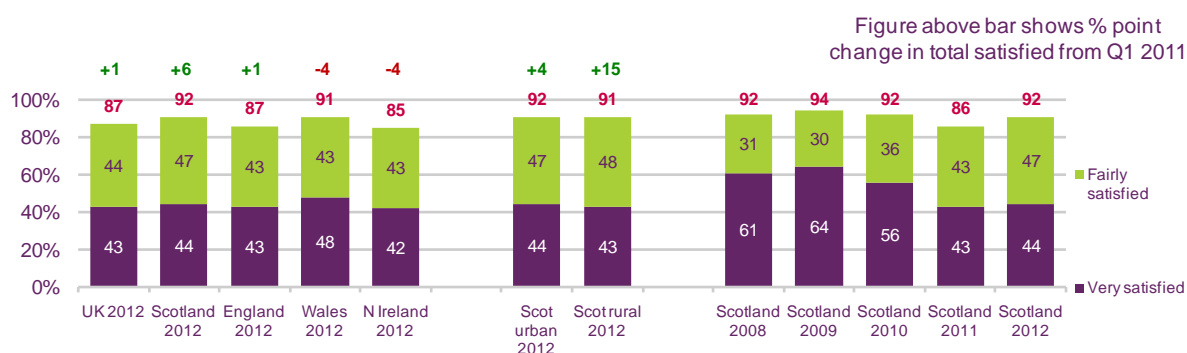
Source: Ofcom research, Q1 2012 Base: Adults aged 16+ who personally use a mobile phone (n = 3392 UK, 430 Scotland, 2043 England, 456 Wales, 463 Northern Ireland, 220 Scotland urban, 210 Scotland rural, 744 Scotland 2008, 877 Scotland 2009, 1237 Scotland 2010, 425 Scotland 2011, 430 Scotland 2012) Question: QD11. Which of these best describes the mobile package you personally use most often?

## 5.5 Satisfaction

### Overall satisfaction with fixed broadband services increased in the year to Q1 2012 in Scotland

Nine in ten fixed broadband users in Scotland (92%) were 'very' or 'fairly' satisfied with their fixed broadband service in Q1 2012 (Figure 5.10). This represented an increase of six percentage points in the year to Q1 2012, meaning that fixed broadband users in Scotland are now reporting greater satisfaction than the UK average. The increase in overall satisfaction is likely to be related to increased satisfaction with the speed of service (see Figure 5.11).

**Figure 5.10 Overall satisfaction with fixed broadband service**

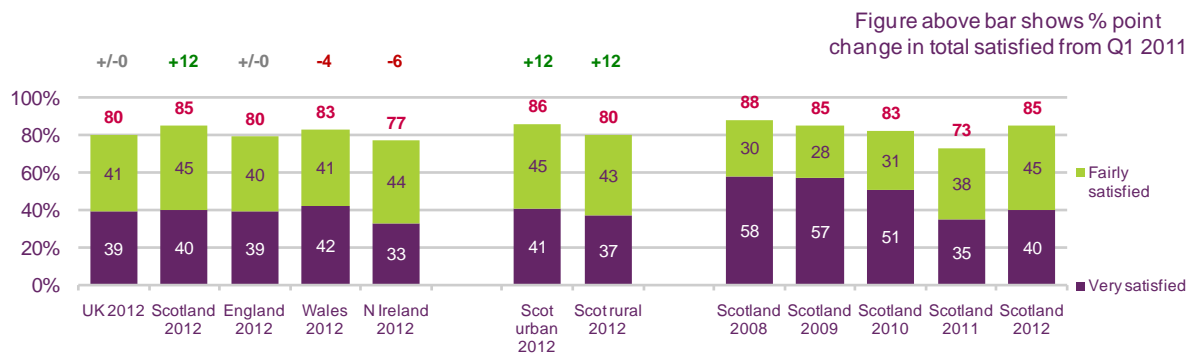


Source: Ofcom research, Q1 2012 Base: Adults aged 16+ with a fixed broadband connection at home (n = 2556 UK, 330 Scotland, 1577 England, 318 Wales, 331 Northern Ireland, 163 Scotland urban, 167 Scotland rural, 489 Scotland 2008, 528 Scotland 2009, 778 Scotland 2010, 294 Scotland 2011, 330 Scotland 2012) Question: Thinking about your fixed broadband internet service, how satisfied are you with (main supplier) for the speed of your service while online (not just the connection)? Note: Figures above chart columns indicate the proportion of people who were 'very' or 'fairly' satisfied with their speed of service while online

## Satisfaction with the speed of fixed broadband services increased in the year to Q1 2012

Ofcom research suggests that the proportion of fixed broadband users in Scotland who were 'very' or 'fairly' satisfied with the speed of their fixed broadband service had declined in the year to Q1 2011. Eighty-five per cent of fixed broadband users in Scotland were satisfied with the speed of their service in Q1 2012, 12 percentage points higher than in Q1 2011 and a similar level to that reported in 2009. Fixed broadband take-up in Scotland increased during the same period, so the increase may partly be explained by the addition of new users to the sample base.

**Figure 5.11 Satisfaction with speed of fixed broadband**



Source: Ofcom research, Q1 2012 Base: Adults aged 16+ with a fixed broadband connection at home (n = 2556 UK, 330 Scotland, 1577 England, 318 Wales, 331 Northern Ireland, 163 Scotland urban, 167 Scotland rural, 489 Scotland 2008, 528 Scotland 2009, 778 Scotland 2010, 294 Scotland 2011, 330 Scotland 2012) Question: Thinking about your fixed broadband internet service, how satisfied are you with (main supplier) for the speed of your service while online (not just the connection)? Note: Figures above chart columns indicate the proportion of people who were 'very' or 'fairly' satisfied with their speed of service while online