Connected Nations Update

Spring 2018

REPORT

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About this document

This is the first spring update on progress made on the coverage of broadband and mobile networks of the UK and its nations since our last annual Connected Nations Report.

As communications play an increasingly critical role in our lives, the supporting infrastructure must keep pace with the needs of people and businesses.

Part of Ofcom's role is to help ensure that people across the UK can access a decent internet service, and make phone calls where and when they need to.

This update to our last annual report in December 2017 tracks communications providers' progress in increasing the availability of good communications, and how the UK's networks are responding to changing needs of people and businesses.

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1. Summary of key developments

1.1 We have used our annual Connected Nations Report to track the coverage of the UK's telecommunications networks since 2011. From this year we will be publishing two updates – this one in spring and another in summer – in addition to the full report at the end of the year.

1.2 This update outlines the main developments in fixed broadband and mobile coverage since our full report was published in December 2017. We have also updated the data used by our coverage checker app for smartphones and tablets, to help people find out more about the availability of fixed broadband and mobile services.

When do we collect the data for our reports?

- The Connected Nations Report 2017, published in December 2017, was based on data captured in May 2017 (fixed broadband coverage) and June 2017 (mobile coverage).
- This update is based on data captured in January 2018.
- The summer update will be based on data captured in May 2018.
- The next full Connected Nations Report will be published in winter 2018 and will be based on coverage data captured in September 2018.

Fixed broadband

1.3 **There have been further improvements in the availability of broadband services across the UK**. However, more needs to be done to provide all consumers with access to decent broadband and to encourage further investment in more reliable, faster full-fibre broadband services.

1.4 **Superfast broadband coverage continues to increase.** In our December report, we highlighted that the availability of superfast broadband, which we define as providing a minimum 30Mbit/s download speed, had increased from 89% to 91% of UK premises. Coverage has continued to improve and superfast broadband is now available to 93% of UK premises (27.2 million).

1.5 The UK Government defines superfast broadband as providing a minimum 24Mbit/s download speed. Coverage of broadband with these speeds was 94% of UK premises in January 2018, based on Ofcom's methodology. However, further network upgrades[1] during January and February have increased this to 95%.

1.6 **Superfast coverage across the nations has increased.** Superfast coverage, based on our definition of having a download speed of at least 30Mbit/s, has increased in Northern Ireland, Scotland and Wales, bringing coverage levels closer to that in England (95%).

[1] Openreach provided us with further data covering the additional properties that they upgraded to fibre to the cabinet (FTTC) or full fibre (Fibre to the Premise, or FTTP) services during January and February 2018.

Superfast coverage in Scotland and Wales is now 91% and 92% of premises respectively, while 88% of premises in Northern Ireland have access to superfast broadband. We will continue to provide technical advice and support to governments, including the Scottish Government, as it delivers its "Reaching 100%" broadband rollout programme[2], and the Welsh Government, as it rolls out the successor scheme to Superfast Cymru.

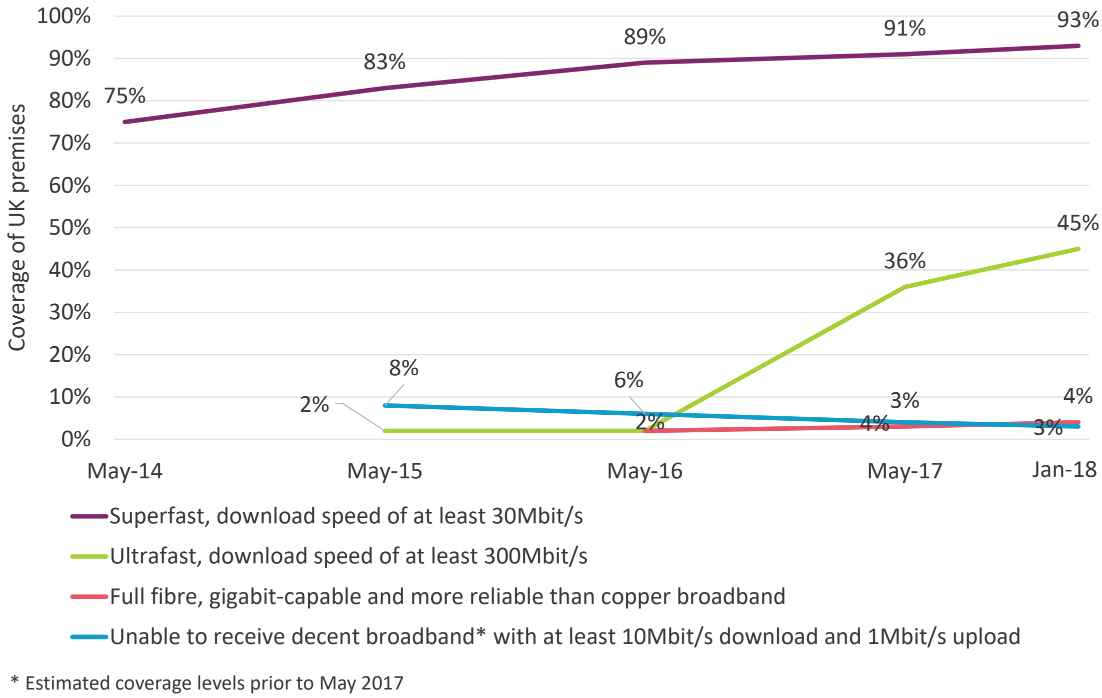
1.7 **The number of premises that cannot get decent broadband has fallen by almost 150,000.** Around 925,000 UK premises cannot get broadband with a download speed of at least 10Mbit/s and an upload speed of at least 1Mbit/s, which is the specification for the UK Government's proposed broadband Universal Service Obligation (USO). There has been a steady reduction in the number of UK properties that cannot get decent broadband in recent years, falling from 1.6 million (6%) in May 2016 to 1.1 million (4%) a year later and downwards to 925,000 (3%) as of January 2018. Nevertheless, there are still too many people in the UK who cannot get a decent broadband connection.

1.8 In March 2018, the UK Government decided, by way of a legislative order, to introduce the USO to ensure people in the UK have the right to request a decent broadband connection. Under the USO legislation, homes and businesses will be able to request a connection up to a cost threshold of £3,400. For the most expensive to reach properties where the costs of providing a USO connection exceed this amount, consumers will need to consider other options.[3] Ofcom is now responsible for implementing the USO and we are planning to publish our first document on implementation of the USO this summer.

[2] Scottish Government. Reaching 100% - Superfast Broadband for All. http://www.gov.scot/Publications/2017/12/2810/1 [accessed 27 April 2018]

[3] These could include paying any excess costs, doing some of the deployment work themselves to help reduce costs, exploring if any local funding is available to help them meet these costs, or to consider commercially available satellite broadband as a backstop solution.

Figure 1: Coverage of fixed broadband services in the UK since May 2014



Source: Ofcom analysis of operator data, May 2014 – January 2018

1.9 **Over one million homes can now get full-fibre connections.** While there has been progress in making superfast services available to over nine out of ten properties, greater investment is needed to build full-fibre networks. These networks are capable of delivering speeds in excess of 1Gbit/s, are more reliable than copper-based networks and can give more consistent performance with speeds closer to those advertised.

1.10 A number of network operators have announced plans to extend their full-fibre networks and we recently announced measures[4] to further increase investment in this future-proof form of broadband. In our December report, we highlighted that the availability of full-fibre services had increased from 498,000 (2%) to 840,000 (3%) of UK premises. As of January 2018 coverage had increased further, with around 1.2 million (4%) UK premises able to receive full-fibre services.

1.11 The coverage of ultrafast services, with a download speed of at least 300Mbit/s, has also increased. 13.2 million UK premises (45%) can now receive these services, up from 10.6 million (36%) in May 2017. Prior to this point, ultrafast coverage was significantly lower at around 2% of UK premises; the increase in availability is largely the result of Virgin Media upgrading its network to offer higher speeds.

[4] Ofcom. New Ofcom rules to boost full-fibre broadband. https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2018/new-rules-boost-full-fibre [accessed 27 April 2018]

Mobile services

1.12 **Mobile coverage has improved but challenges remain in many rural areas.** Providing good quality fixed broadband to everybody is challenging, given the need to install or upgrade networks in remote or difficult to reach areas. However, achieving good mobile coverage is arguably more demanding, especially in rural areas, where the number of people served by each mast is relatively low, and securing power and onward network connectivity can be difficult. While there have been a number of improvements in mobile coverage since our last report, we know that coverage needs to improve further and we are working with Government and industry to make this happen.

1.13 Our work includes releasing more airwaves, such as the proposed award of the 700 MHz spectrum band, along with taking steps to improve coverage in rural areas. We are also working with Government on how the planning regime might make it cheaper and easier for companies to install mobile masts.

1.14 **In December 2017 we changed the way we measure mobile coverage to reflect the actual experience of mobile users.** Expectation of mobile services is changing as people become more dependent on mobile services and need to access them wherever they are - indoors, outdoors or on the move. At the same time the devices we use to access mobile services have changed, with increasing take-up of smartphones and tablets, which require stronger signals than older, simpler phones. Our engineers carried out tests to ensure mobile coverage information reflects the actual experience of mobile users.[5]

1.15 We define mobile coverage in a way that is likely to deliver a decent experience to smartphone users:

a) **Telephone calls:** Nearly all 90-second telephone calls should be completed without interruption.

b) **Data services:** Nearly all connections should deliver a speed of at least 2Mbit/s. This is fast enough to browse the internet and watch glitch-free mobile video.

1.16 We have used crowdsourced[6] data from consumer handsets to identify the signal levels needed to meet these targets at least 95% of the time. We have also continued to check that mobile operators are providing the signal levels they have predicted.

1.17 How you measure coverage is important, but so is *where* you measure it. To reflect the places in which consumers are likely to use their mobile, we look at coverage in three ways:

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[5] During the course of this technical work we observed some differences between some of our measured signal strengths and those predicted by EE. To date, we have been unable to fully explain these differences to our satisfaction. We are continuing to work with EE and expect to reflect the outcome of these discussions in our next update.

[6] Crowdsourcing is the use of data from a large number of people and, in this particular case, their mobile phones. This data is automatically collected and made available for analysis.

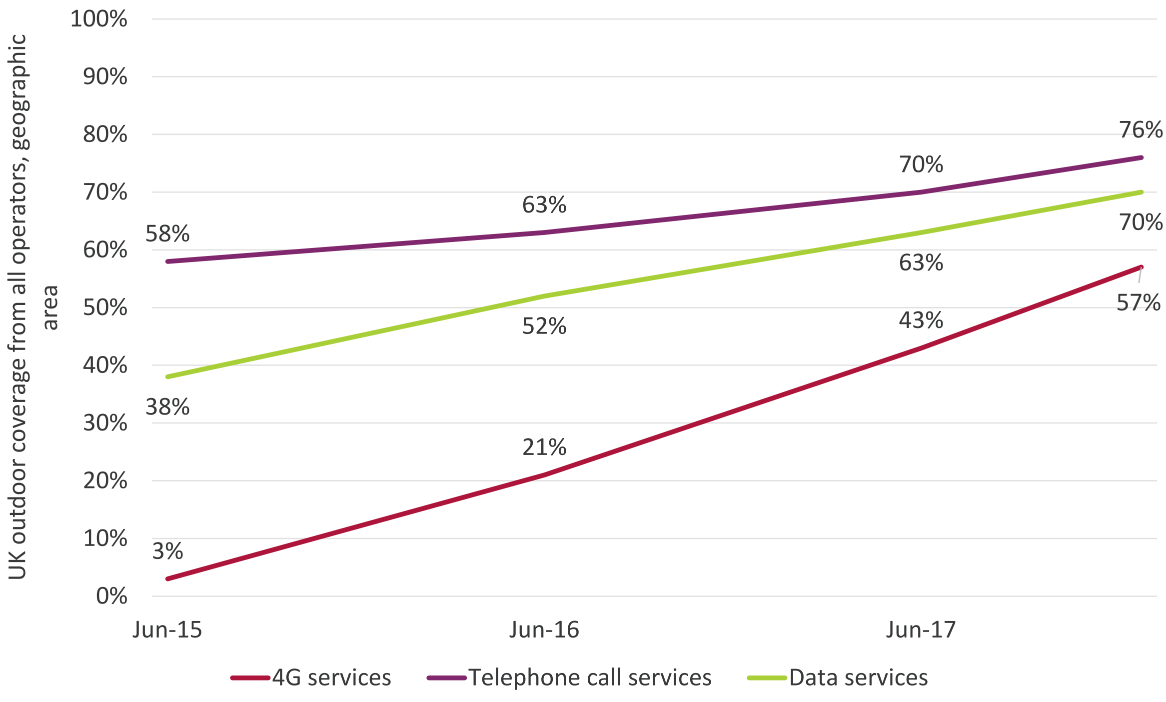
a) **Outdoor:** The percentage of geographic area where someone can use their phone while outdoors. This measurement is useful for assessing the likelihood of successfully using a phone while out and about.

b) **Indoor:** The percentage of premises in which someone can use their phone. This measurement is useful for assessing the likelihood of successfully using a phone while at home or at work is based on the user being in a window-lit room, as opposed to being deeper inside the building where mobile signals are often weaker.

c) **Roads:** The percentage of the network of A and B roads on which someone can use their phone while inside a vehicle. This measurement is useful for assessing the likelihood of successfully using a phone while driving between locations.

1.18 **Outdoor coverage has improved, but only three quarters of the UK has telephone call coverage from all operators.** 76% of the UK's geographic area is now covered by all operators for telephone calls, up from 70% in June 2017 and 63% a year earlier. Outdoor access to data services has also increased; 70% of the UK's geographic area now has a mobile data service from all four operators, up from 63% in June 2017 and 52% in June 2016.

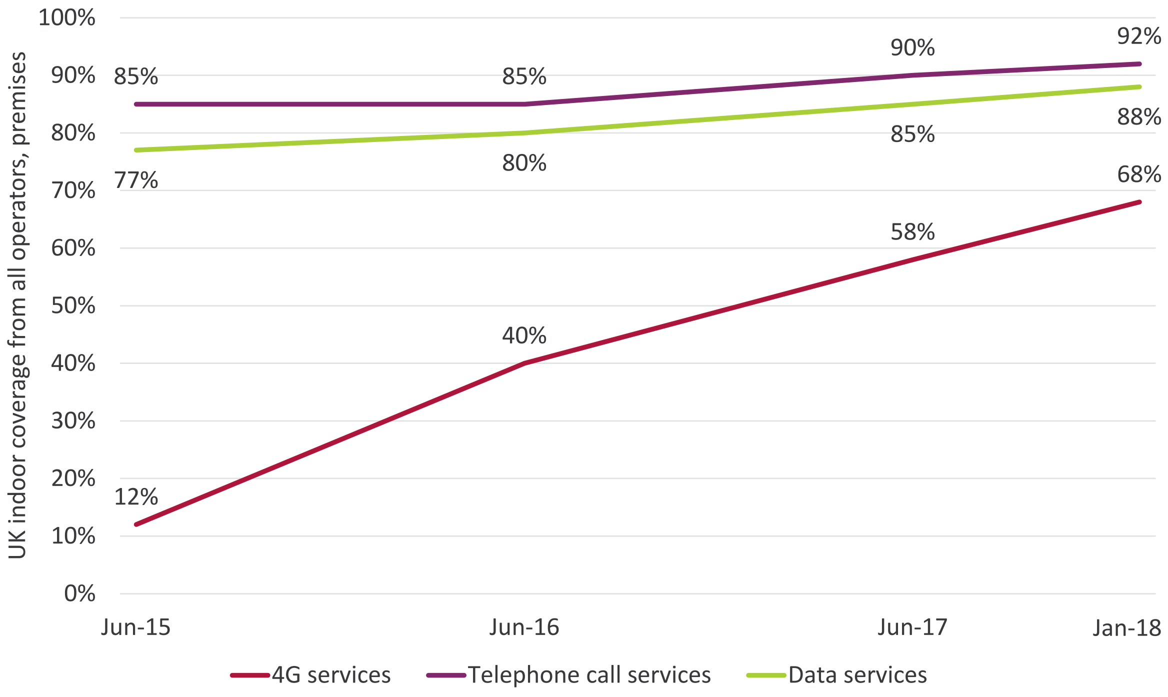
Figure 2: Outdoor area coverage of mobile services in the UK from all operators since June 2015



Source: Ofcom analysis of operator data, June 2015 – January 2018

1.19 **There have been modest improvements in indoor coverage levels.** 92% of UK premises have indoor telephone call coverage from all four mobile networks, up from 90% in June 2017 and 85% in June 2016. The coverage of data services from all operators has also improved slightly, rising from 80% of UK premises in June 2016, to 85% in June 2017 to the current figure of 88% of UK premises.

Figure 3: Indoor premises coverage of mobile services in the UK from all operators since June 2015



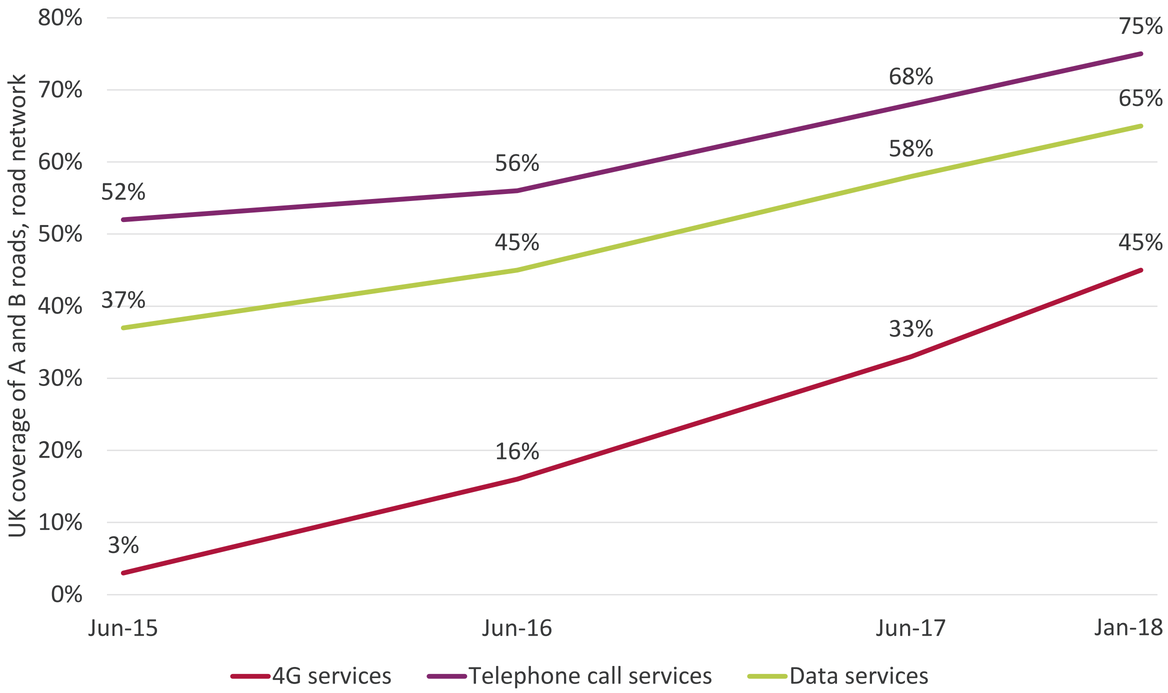
Source: Ofcom analysis of operator data, June 2015 – January 2018

1.20 **Less than seven in 10 UK homes and businesses have 4G coverage indoors from all operators.** 68% of UK premises are now covered by a 4G signal from all operators, up from 58% in June 2017 and 40% in 2016.

1.21 **Less than two thirds of the UK has outdoor 4G coverage from all operators.** In December 2017, we highlighted that outdoor 4G coverage from all operators had doubled, from 21% to 43% of UK geographic area. Outdoor 4G coverage continues to increase, but is still relatively low compared to more mature 2G and 3G networks, with just 57% of the UK's geographic area covered by all operators.

1.22 **Three quarters of UK roads are covered for telephone calls from all operators.** 75% of the UK's A and B roads are now covered by all operators for telephone calls, an increase from 68% in June 2017 and 56% in 2016. On the remaining 25% of roads there will be coverage by fewer than four operators, which means it make be harder to make or receive a telephone call. In the event of an accident or incident, emergency calls can be made on any available mobile network. Only 3% of the UK's A and B roads now have no coverage for telephone calls from any operator at all and, in these locations, emergency calls using a mobile phone are unlikely to be successful. This figure has reduced from 5% in June 2017.

Figure 4: A and B road coverage of mobile services in the UK from all operators since June 2015



Source: Ofcom analysis of operator data, June 2015 – January 2018

1.23 **The picture varies across the nations.** While the ongoing rollout of 4G services has led to some improvements, mobile coverage is still worse in Northern Ireland, Scotland and Wales than it is in England. This is unsatisfactory and more needs to be done to improve coverage in the nations.

1.24 The area covered by 4G services from all operators increased by 20% in Northern Ireland, by 76% in Scotland and by 88% in Wales in the period since June 2017. However, even with these increases, coverage is poor in many places, with only 45% and 30% of geographic area covered by 4G services from all operators in Wales and Scotland respectively. In March 2018, the Scottish Government announced further details of its '4G Infill Programme' which is intended to deliver mobile infrastructure to complete mobile 'not spots' in Scotland.[7]

1.25 **Coverage obligations are the main means Ofcom has to improve mobile coverage.** The award of the airwaves in the 700 MHz spectrum band to mobile services provides an important opportunity to improve coverage. We propose that new obligations included in the award, on which we are currently consulting[8], will be defined to reflect the actual experience of today's mobile users. We also believe that they should focus on driving improvements in rural areas, where the current experience is poorest and is least likely to

[7] Scottish Government. Scottish 4G infill programme: State aid. https://beta.gov.scot/publications/4g-infill-programme-state-aid/ [accessed 27 April 2018]
[8] Ofcom. Improving mobile coverage: Proposals for coverage obligations in the award of the 700 MHz spectrum band. https://www.ofcom.org.uk/__data/assets/pdf_file/0022/111937/consultation-700mhz-coverage-obligations.pdf [accessed 27 April 2018]

be addressed by operators' commercial deployments. However, we acknowledge that coverage obligations alone will not solve all of the UK's mobile coverage problems and we continue to work with governments and industry to explore complementary approaches.

2. Dashboards

Fixed broadband and mobile coverage - UK

Fixed broadband services	UK premises coverage as of	
	January 2018	May 2017
Access to a download speed of 10Mbit/s or higher	97% 28.4 million	97% 28.3 million
Access to a download speed of 30Mbit/s or higher (superfast)	93% 27.2 million	91% 26.7 million
Access to a download speed of 300Mbit/s or higher (ultrafast)	45% 13.2 million	36% 10.6 million
Access to full fibre services[9]	4% 1.2 million	3% 840,000
Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum)	3% 0.93 million	4% 1.07 million

[9] We currently consider a property covered by full fibre services only if they can be connected within 14 days.

Mobile services[10]	UK coverage as of	
	January 2018	June 2017
4G services		
Premises (indoor) covered by all operators[11]	68%	58%
Geographic area covered by all operators	57%	43%
Geographic area not covered by any operator	13%	22%
Coverage of A and B roads by all operators	45%	33%
A and B roads not covered by any operator	8%	16%
Telephone call services (2G, 3G and 4G)		
Premises (indoor) covered by all operators	92%	90%
Geographic area covered by all operators	76%	70%
Geographic area not covered by any operator	7%	9%
Coverage of A and B roads by all operators	75%	68%
A and B roads not covered by any operator	3%	5%
Data services (3G and 4G)		
Premises (indoor) covered by all operators	88%	85%
Geographic area covered by all operators	70%	63%
Geographic area not covered by any operator	7%	12%
Coverage of A and B roads by all operators	65%	58%
A and B roads not covered by any operator	4%	7%

[10] Coverage thresholds are: 2G outdoor (-81dBm), 3G outdoor (-100dBm), 4G services outdoor (-105dBm), 4G voice services outdoor (-105dBm) and 4G data services outdoor (-115dBm).

[11] The indoor coverage figures in this report take into account the effects of walls, doors, roofs etc. which will reduce or block mobile signals as they pass through. We have assumed that all buildings block mobile signals in the same way (by reducing signal strength by 10dB). In reality, some buildings will block signals more than others and we will reflect this in subsequent updates.

Fixed broadband and mobile coverage - England

Fixed broadband services	England premises coverage as of	
	January 2018	May 2017
Access to a download speed of 10Mbit/s or higher	98% 23.8 million	97% 23.7 million
Access to a download speed of 30Mbit/s or higher (superfast)	94% 22.8 million	93% 22.6 million
Access to a download speed of 300Mbit/s or higher (ultrafast)	47% 11.5 million	39% 9.5 million
Access to full fibre services[12]	4% 1.02 million	3% 800,000
Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum)	3% 677,000	3% 790,000

[12] We currently consider a property covered by full fibre services only if they can be connected within 14 days.

Mobile services	England coverage as of January 2018	England coverage as of June 2017
4G services		
Premises (indoor) covered by all operators[13]	69%	60%
Geographic area covered by all operators	73%	60%
Geographic area not covered by any operator	3%	5%
Coverage of A and B roads by all operators	52%	40%
A and B roads not covered by any operator	4%	8%
Telephone call services (2G, 3G and 4G)		
Premises (indoor) covered by all operators	93%	91%
Geographic area covered by all operators	91%	88%
Geographic area not covered by any operator	1%	2%
Coverage of A and B roads by all operators	83%	78%
A and B roads not covered by any operator	1%	2%
Data services (3G and 4G)		
Premises (indoor) covered by all operators	89%	87%
Geographic area covered by all operators	86%	82%
Geographic area not covered by any operator	1%	2%
Coverage of A and B roads by all operators	72%	67%
A and B roads not covered by any operator	1%	2%

[13] The indoor coverage figures in this report take into account the effects of walls, doors, roofs etc. which will reduce or block mobile signals as they pass through. We have assumed that all buildings block mobile signals in the same way (by reducing signal strength by 10dB). In reality, some buildings will block signals more than others and we will reflect this in subsequent updates.

Fixed broadband and mobile coverage – Northern Ireland

Fixed broadband services	NI premises coverage as of	
	January 2018	May 2017
Access to a download speed of 10Mbit/s or higher	94% 721,000	93% 718,000
Access to a download speed of 30Mbit/s or higher (superfast)	88% 675,000	85% 658,000
Access to a download speed of 300Mbit/s or higher (ultrafast)	35% 266,000	25% 196,000
Access to full fibre services	8% 58,200	0.7% 5,600
Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum)	7% 50,500	7% 55,600

Mobile services	NI coverage as of	
	January 2018	June 2017
4G services		
Premises (indoor) covered by all operators	52%	44%
Geographic area covered by all operators	72%	60%
Geographic area not covered by any operator	3%	6%
Coverage of A and B roads by all operators	39%	26%
A and B roads not covered by any operator	7%	12%
Telephone call services (2G, 3G and 4G)		
Premises (indoor) covered by all operators	81%	78%
Geographic area covered by all operators	87%	83%
Geographic area not covered by any operator	1%	1%
Coverage of A and B roads by all operators	69%	62%
A and B roads not covered by any operator	3%	4%
Data services (3G and 4G)		
Premises (indoor) covered by all operators	78%	75%
Geographic area covered by all operators	80%	76%
Geographic area not covered by any operator	1%	2%
Coverage of A and B roads by all operators	58%	54%
A and B roads not covered by any operator	3%	4%

Fixed broadband and mobile coverage - Scotland

Fixed broadband services	Scotland premises coverage as of	
	January 2018	May 2017
Access to a download speed of 10Mbit/s or higher	95% 2.5 million	95% 2.5 million
Access to a download speed of 30Mbit/s or higher (superfast)	91% 2.4 million	87% 2.3 million
Access to a download speed of 300Mbit/s or higher (ultrafast)	41% 1.08 million	30% 797,000
Access to full fibre services	2% 62,900	0.7% 19,200
Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum)	5% 134,000	6% 155,000

Mobile services	Scotland coverage as of	
	January 2018	June 2017
4G services		
Premises (indoor) covered by all operators	67%	53%
Geographic area covered by all operators	30%	17%
Geographic area not covered by any operator	31%	52%
Coverage of A and B roads by all operators	32%	18%
A and B roads not covered by any operator	20%	38%
Telephone call services (2G, 3G and 4G)		
Premises (indoor) covered by all operators	90%	87%
Geographic area covered by all operators	50%	40%
Geographic area not covered by any operator	17%	22%
Coverage of A and B roads by all operators	56%	46%
A and B roads not covered by any operator	9%	15%
Data services (3G and 4G)		
Premises (indoor) covered by all operators	87%	82%
Geographic area covered by all operators	42%	31%
Geographic area not covered by any operator	18%	33%
Coverage of A and B roads by all operators	50%	39%
A and B roads not covered by any operator	11%	22%

Fixed broadband and mobile coverage - Wales

Fixed broadband services	Wales premises coverage as of	
	January 2018	May 2017
Access to a download speed of 10Mbit/s or higher	96% 1.4 million	95% 1.4 million
Access to a download speed of 30Mbit/s or higher (superfast)	92% 1.3 million	89% 1.3 million
Access to a download speed of 300Mbit/s or higher (ultrafast)	23% 328,800	10% 144,000
Access to full fibre services	5% 68,400	3% 44,500
Unable to access a download speed of 10Mbit/s and an upload speed of 1Mbit/s (Universal Service Obligation minimum)	4% 63,200	5% 73,800

Mobile services	Wales coverage as of	
	January 2018	June 2017
4G services		
Premises (indoor) covered by all operators	52%	34%
Geographic area covered by all operators	45%	24%
Geographic area not covered by any operator	12%	24%
Coverage of A and B roads by all operators	32%	16%
A and B roads not covered by any operator	12%	25%
Telephone call services (2G, 3G and 4G)		
Premises (indoor) covered by all operators	86%	80%
Geographic area covered by all operators	73%	62%
Geographic area not covered by any operator	5%	9%
Coverage of A and B roads by all operators	66%	53%
A and B roads not covered by any operator	6%	9%
Data services (3G and 4G)		
Premises (indoor) covered by all operators	82%	73%
Geographic area covered by all operators	70%	52%
Geographic area not covered by any operator	5%	9%
Coverage of A and B roads by all operators	60%	42%
A and B roads not covered by any operator	5%	10%