Business Connectivity Services Review

May 2015

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continental

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Appendices

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1. Introduction

1.1 Background and objectives

Ofcom has a statutory requirement to conduct regular reviews of the business connectivity market. With this in mind, Ofcom is carrying out a "business connectivity market review" that focuses on the market for business connectivity services (BCS), which carry voice and/or data traffic between business sites to enable all types of communications within an organisation.

For the purpose of this BCS user survey, services which were included in the definition of BCS were:

- Leased lines[1] for some/all voice and/or some/all data communication
- Virtual Private Network/s (VPNs), mainly underpinned by leased lines access links
- Virtual Private Network/s(VPNs [2]), mainly underpinned by ADSL[3] or cable modem, or fibre broadband connection access
- Ethernet First Mile (EFM)
- SDSL[4] for some/all voice and/or some/all data communications
- Mobile/wireless technology (as a replacement for data over a fixed line)

Questions were used to screen out any respondents NOT using any of the key BCS. Businesses with fewer than 10 employees were excluded from the survey.

Ofcom's market reviews have three broad stages:

- Defining the relevant market (s) in terms of product and geography
- Assessing the level of competition in the markets identified
- Assessing the regulatory options within that market

In order to inform the definition of the business connectivity market on a forward-looking basis, market research was first conducted in 2007 and again in 2011 to provide evidence from the perspective of end-users of BCS. This process was repeated again in the summer of 2014 by BDRC Continental. This document summarises the main results of the 2014 market research study and the methodology used to conduct the research.

Where possible comparisons are drawn with the 2011 research, however due to differences in questionnaire and data weighting these are limited.

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[1]**Leased Line**: A service contract between a provider and a customer, whereby the provider agrees to deliver a dedicated uncontended symmetric telecommunications line connecting two or more locations in exchange for a monthly rent (hence the term lease). Typically, leased lines are used by businesses to connect geographically distant offices. Unlike dial-up connections, a leased line is always active.

[2]**VPN:** Virtual Private Network- A service provided on a public telecommunications network that provides businesses with inter-site connections emulating those of a private network.

[3]**ADSL:** Asymmetric digital subscriber line is a type of digital subscriber line technology, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide.

[4]**SDSL:** Symmetrical Digital Subscriber Line. Like ADSL but with equal upload and download speeds.

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1.2   Research objectives

The main objective of this review is to understand end-users' preferences with respect to products and supply conditions, including suppliers, and where possible establish how these have changed since the last review.

The specific objectives of this research were to establish:

- Business end-users' commercial needs (now and going forward) so that we can identify the different characteristics end-users value in relation to BCS.
- Information on the current data services and voice services they use (i.e. using dedicated leased lines, traditional public switched telephone networks, or using internet protocols). Information on whether they purchase these services separately and/or from different providers.
- What characteristics of business connectivity services business end-users place most value on, and whether and how they trade-off these characteristics against each other.
- Business end-users' perceptions of available business connectivity products and whether they consider that different products are capable of meeting their business connectivity needs and any barriers they face to switching between products.

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2. Executive summary

The following findings are the key highlights from a survey of 615 businesses with 10 or more employees across the UK which use business connectivity services (BCS). BCS are defined as those which *carry voice and/or data traffic between business sites to enable all types of communication within an organisation*. A full list of services included in the definition of BCS for the purposes of this survey can be found in section 1.1 above.

2.1 Background, objectives & research methodology

Ofcom is carrying out a "business connectivity market review" that focuses on the competitive landscape for the wholesale telecoms network inputs used to provide BCS to end-users. However, given the demand for wholesale products is ultimately driven by end-user requirements, an important element of the review is to understand those businesses using BCS.

One of the main objectives of the research is therefore to understand end-users' preferences with respect to products and supply conditions, including suppliers, and where possible establish how these have changed since the last review in 2011. Market research was conducted by BDRC Continental in the summer of 2014.

The research involved a quantitative study comprising 615 interviews via CATI (Computer Assisted Telephone Interviewing) among businesses with 10 or more employees that purchase BCS.

In addition a selection of depth case study interviews were conducted from among respondents in the quantitative study to explore some key market definition issues in more detail.

During the initial phase of the survey, respondents were asked about a number of telecom services that their businesses might have, in order to "screen-out" those without the key BCS required for further discussion and analysis. Data collected at this stage was then weighted to the profile of all UK businesses with 10 or more employees to determine the incidence of BCS among **all UK businesses** of this size.

Overall, 53% of all UK businesses with 10 or more employees have any BCS. However, most businesses who qualified for the main survey because they use BCS services also use non-BCS services.

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2.2   Profile of businesses purchasing BCS

As relatively few small businesses use leased lines, the sample excluded those with fewer than 10 employees.[5]

The sample was structured to permit analysis by business size: an even split between small (10-100 employees), medium (101-500) and large (501+) businesses was achieved and then weighted to the profile of UK businesses with 10 or more employees that have any BCS. Sector and region were broadly represented but some of the low incidence sectors or regions were boosted to match the profile of businesses in the 2011 wave.

2.3   Business connectivity services & suppliers used

Annual spend on BCS is clearly correlated with business size; 17% of large businesses spend less than £50k, compared with 76% of small ones.

The majority of businesses manage the design and choice of network requirements as well as network management and monitoring in house, while outsourcing the installation and connection of their BCS.

In terms of suppliers, BT is the most widely used (56%), followed by Virgin Media (9%) and TalkTalk (6%). A number of other suppliers have 5% or less of the business customers in this market. 25% of businesses use multiple suppliers. Small businesses are less likely to do this, and large businesses more so.

2.4   Business needs

The most important features for businesses when making decisions about BCS are **availability** (a measure of reliability)[6], **resilience** (an option for a second data path to provide higher availability) and **bandwidth – both download and upload speed**.[7]

Availability has by far the greatest importance for businesses, with nearly twice the level of importance than next most important service element, **resilience**.

Businesses say **bandwidth (both upload and download speed)** are most likely to increase in future importance. Around half say that these will become more important over the next three years.

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[5] Ofcom has carried out a separate survey amongst SMEs that confirms this
http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/sme/sme_research_report.pdf
[6] Throughout this report, availability is used to describe a measure of reliability (i.e. the uptime for the service without disruption)
[7] Some examples of current and future BCS priorities for businesses were discussed in case study interviews, outlined in Appendix A

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Availability, **resilience** and **latency**[8] are expected to become more important over the next three years by less than half of businesses overall (43%, 35% and 27% respectively). However, these elements are expected to be significantly more important among medium and large businesses than small ones:

- 61% of large businesses and 56% of medium businesses think **availability** will become more important vs. 42% of small businesses

- 56% of large businesses and 53% of medium businesses think **resilience** will become more important vs. 34% of small businesses

- 39% of large businesses and 41% of medium businesses think **latency** will become more important vs. 26% of small businesses.

The majority of businesses **review value-for-money** or service quality at least every 2-3 years and nearly three in five go to formal tender within the same period.

Around one-third of businesses have changed **supplier** and one-fifth the **technology/service** underpinning their BCS. The main drivers to change for both are **cost**, **speed** and **reliability**, although cost appears to be the key influence when changing **supplier** while for **service/technology** changes, service factors have a greater role.

2.5   Switching

Several issues affect a business's ability and desire to switch supplier for BCS[9]:

- Around a third of businesses have existing contracts of 1 to 2 years (37%) and a similar proportion have contracts of 2 to 5 years (33%).
- Nearly half (48%) of businesses say that their BCS are all purchased as single products.
- 69% of businesses use a single supplier for all BCS.
  - However, 80% say that having all their services with a single supplier is not a barrier to switching.

Most businesses (87%) are satisfied with the service from their main supplier regardless of business size and this appears to be reflected in the role that existing relationships play in barriers to switching.

Price and hassle are among the key barriers to switching (31% and 29% respectively); however, existing relationships also play a role (reflecting the fact that the majority are satisfied with their current main supplier) with a fifth citing good contacts at their existing supplier (20%) or that their current supplier understands their business (18%).

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[8] A measure of the end to end delay in transmission of data
[9] Some examples of the review process undertaken by businesses and the factors considered when switching were discussed in case study interviews, outlined in Appendix A

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While most leased line users (82%) have not actively considered replacing these with standard or superfast[10] asymmetric broadband, 14% say they *have* actively considered it (6% intend to switch to asymmetric broadband at the end of their current contract while the rest (8%) have decided against it). Around a third of those that had not considered switching say they are likely to consider switching to it in the future; while 40% say they are likely to replace their current leased line service in the next three to five years; and nearly half of these will likely consider broadband (superfast or ADSL) and a quarter Ethernet.

Overall, 40% of leased line users say they are likely to replace their current leased lines in the next 3-5 years, suggesting that up to 18% with any leased lines think that they would be likely to switch to broadband and up to 9% to Ethernet in future.

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[10] Asymmetric fibre broadband services that offer headline speeds starting at 30Mbit/s or more and can be higher depending on location.

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3. Research methodology

The research involved a quantitative study comprising 615 interviews via CATI (computer assisted telephone interviewing) with businesses with 10 or more employees that purchase BCS; **53**% of UK businesses with 10 or more employees use at least one BCS. A full definition of services included can be found in section 3.2.

Interviews were conducted with the primary decision maker for BCS. Businesses with fewer than 10 employees were excluded from the survey.

Quotas were set to permit analysis of the results in terms of size of business and to match the previous wave by sector and geographical split across England, Scotland, Wales and Northern Ireland.

To determine the incidence of BCS use in the UK, profile data and telecom services used was collected for **all businesses** starting the survey, which was then weighted to the profile of UK businesses with 10 or more employees by sector, nation, region and size.

Fifty-three per cent of all UK businesses with 10 or more employees have any BCS (as defined in section 3.3), but most businesses who qualified for the main survey because they use BCS services also use non-BCS services.

The aim was to obtain 25 in each of the English regions and nations and at least 25 in each industry grouping. Central government was deliberately targeted to ensure that at least 10 organisations of this type were interviewed.

Figure 3.1 Breakdown of <u>weighted</u> sample by number of employees

Number of employees	All respondents with BCS
10-50	44%
50-100	46%
101-250	5%
251-500	4%
501-1000	>1%
1001+	1%

Base: All respondents with BCS n=615
Question: QS2 Approximately how many employees does your company/organisation have at all sites in the UK?

The unweighted sample surveyed comprised: 31% small businesses (10-100 employees), 37% medium sized businesses (101-500 employees) and 32% large businesses (501+ employees).

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This was then weighted to the profile of UK businesses with 10 or more employees that use BCS by broad region, nation, sector and number of employees. The resulting sample comprised: 90% small businesses, 8% medium sized businesses and 1% large businesses.[11]

As 2011 data was not weighted to match the above profile, no comparisons can be drawn between 2011 and 2014 at a total level, however, the 2014 data was weighted so that comparisons could be made by business size band (small, medium and large businesses) between the two waves and where possible, we have done so.

Fieldwork was conducted between 7th July and 22nd August 2014. The first ten interviews conducted between 7th and 8th July were treated as 'pilot' interviews and fieldwork was temporarily halted between 9th and 17th July so that the initial results could be examined to assess whether any modifications needed to be made to the questionnaire for the remaining interviews (the results of this pilot stage are included in the appendix).

The questionnaire was 20 minutes in length and, where possible, questions were kept consistent with those used in 2011 for tracking purposes. A copy of the 2014 questionnaire can be found in the Appendix.

In total, interviewers attempted to contact **16,005** businesses in order to achieve **615** interviews with businesses with 10 or more employees that purchase BCS.

- This means that 3.85% of businesses who were contacted (or were attempted contact) qualified for the survey and took part in the full interview.
- 23.5% refused to take part in the interview and 2.95% were ineligible for the survey i.e. they had fewer than 10 employees, they did not have BCS or they worked in sectors where the quotas had already been fulfilled.
- The remainder were generally respondents who could not be contacted (on holiday, off sick etc.).

3.1   Case study depth interviews

In addition to quantifying the market, Ofcom wished to gain a deeper understanding of a selection of key market definition issues and to this end three in-depth case study interviews were conducted among respondents in the quantitative study that matched the criteria of interest and indicated that they would be willing to take part in the exercise. Full details of these interviews are included in Appendix A and referenced where relevant in the main body of the report.

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[11] Throughout, where results are reported on *effective* bases of less than 100, a 'Caution Low Base' warning is given. N.B. The sampling and weighting approach taken has resulted in low *effective* base sizes for some samples with *unweighted* bases greater than 100.

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3.2   About the analysis and report

Sub-group analysis has been conducted for this report, with a particular focus on **business size** (small, medium and large). Where such differences are reported they are statistically significant to a 99% confidence level.

Where possible, 2014 findings are compared with those of the 2011 survey by business size. Although this survey was very similar to the 2014 research, as discussed above, differences in the weighting of the data mean no comparisons can be drawn between waves at a total level. Further, there are limitations with regard to questionnaire differences and changes in the market.

This report focuses on the main findings of interest from this research. However, all data are available in the Market Data and Research section of Ofcom's website- http://stakeholders.ofcom.org.uk/market-data-research/market-research/

This report is a collaboration between Ofcom and BDRC Continental and it is presented in the following sections:

- **Section 4** provides profiling information about businesses with 10 or more employees that purchase BCS; their regional distribution, industry sector, business size, annual turnover and number of sites or offices.
- **Section 5** examines the different BCS used and the suppliers who provide these, exploring how BCS are managed within organisations, levels of service contention and bandwidth needs.
- **Section 6** focuses on specific BCS in terms of bandwidth, voice and data usage, and suppliers providing these services.
- **Section 7** explores business needs; the relative importance of service features, reviews and changes to services in the past and planned for the future.
- **Section 8** looks at switching, in terms of potential barriers, future likelihood and the impact of newer technologies on propensity to switch suppliers and/or services.
- **Appendix: Case study interviews, 2014 research questionnaire, Glossary of Terms, Pilot Interviews**

3.3   Definition of BCS

BCS are defined as those which *carry voice and/or data traffic between business sites to enable communication within an organisation*.

Most businesses with 10 or more employees were using a variety of services. Questions were used to screen out any respondents NOT using any of the key BCS:

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Figure 3.2 Services included for the purposes of research

The following <u>WERE</u> included in the definition of BCS: ✓

- **SDSL** for some/all voice and/or some/all data communications
- **Virtual Private Network/s** (VPNs), mainly underpinned by ADSL or cable modem access
- **Virtual Private Network/s** (VPNs), mainly underpinned by leased lines access links
- **Leased lines** for some/all voice and/or some/all data communication
- **Ethernet First Mile** (EFM)
- **Mobile/wireless technology** (as a replacement for data over a fixed line)

Figure 3.3 Services NOT included for the purposes of research

The following <u>WERE NOT</u> included in the definition of BCS: ✗

- Regular **PSTN** telephone line(s) only for all voice communications
- **Internet access via dial-up** as the only data service
- **ISDN line(s)** for all voice & data communications
- **Cable modem or ADSL or mobile broadband** for some/all voice and/or some/all data communications

It is important to note that most who qualified for the main survey because they use BCS services (as defined above) also use non-BCS services. As we see in section 3.4, **53% of businesses with 10 or more employees have any BCS** (67% among large businesses; 60% among medium; 52% among small) as defined by:

- Leased lines (37%) – for the purposes of this report we refer to any leased lines using Ethernet, SDH/PDH or analogue technologies (Ethernet First Mile and SDSL are reported separately)
- VPNs underpinned by either ADSL/cable modem (39%) OR leased lines (22%)
- Ethernet First Mile (14%)
- SDSL (13%)
- Mobile/wireless technology (as a replacement for data over a fixed line) (42%)

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3.4   Incidence of BCS among UK businesses (10+ employees)

During the initial phase of the survey, respondents were asked about a number of telecom services that their businesses might have, in order to "screen-out" those without the key BCS required for further discussion and analysis. Data collected at this stage was then weighted to the profile of all UK businesses with 10 or more employees to determine the incidence of BCS among **all UK businesses** of this size.

Figure 3.4 looks at the incidence of ALL telecom services among **all UK businesses with 10 or more employees**. Those highlighted in green represent the BCS as defined for this survey. As figure 3.4 shows, there is considerable usage of multiple services. On average, businesses with 10 or more employees use 3.9 different telecom services, rising to 5.2 among medium businesses and 6.2 among large ones.

Two-thirds use an ADSL/cable modem/fibre broadband connection, while one-third uses regular PSTN[12] telephone lines for voice services and two-fifths have ISDN lines for voice or data. Around 1 in 10 (12%) still has dial-up internet.

53% of all UK businesses with 10 or more employees have any BCS as defined for the purposes of this research (and shaded green in figure 3.4) as:

- SDSL for some/all voice and/or some/all data communications
- Virtual Private Network/s (VPNs), mainly underpinned by ADSL or cable modem, or fibre broadband connection access
- VPNs, mainly underpinned by leased lines access links
- Leased lines for some/all voice and/or some/all data communications
    - Analogue, Digital, Ethernet
- Ethernet First Mile
- Mobile/wireless technology (as a replacement for data over a fixed line)

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[12]**PSTN:** A public switched telephone network- The international network that provides circuit switched voice telephone services under end-user control.

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Figure 3.4 Incidence of types of BCS among all UK businesses (10+ employees)

%

BCS
VPNs (any)	42
Mobile/wireless in place of data over a fixed line	42
VPNs mainly underpinned by ADSL/cable modem	39
Leased Lines (any)	37
VPNs mainly underpinned by Leased Lines	22
Ethernet First Mile (EFM)	14
SDSL for some/all voice and/or some/all data	13
Leased Lines (Analogue)	11
Leased Lines (Ethernet)	7
Leased Lines (Digital)	5

OTHER SERVICES
ADSL or Cable Modem or fibre broadband	66
ISDN Lines for voice and data	43
Regular PSTN telephone lines for voice	33
Internet access via dial-up	12
Other	5
None of these	19

0   20   40   60   80   100

Base: Total initial sample (n=1049) (Small n=368; Medium n=377; Large n=304)

Question: QS1a Thinking about your company's current telecoms provision for voice and data connectivity, which of the following types of telecoms services does your company have? QS1b What types of leased lines or other business connectivity services do you have? QS1c What types of leased lines or other business connectivity services do you have underpinning your VPN?

The incidence of BCS varies greatly by business size. 67% of large businesses (more than 500 employees) have any of these services compared with 52% among small businesses.

VPNs represent a key BCS, with over two in five businesses (42%) with 10 or more employees having these in some capacity; VPNs are more likely to be mainly underpinned by ADSL/cable modem than leased lines (although the latter are used by more than a fifth of businesses overall).

Two-fifths (37%) use any variety of leased lines. Analogue leased lines were slightly more commonly used than digital and Ethernet.

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4. Profile of businesses purchasing business connectivity services

The remainder of the report looks at businesses with 10 or more employees that use BCS. Businesses with fewer than 10 employees were excluded from the survey

4.1 Summary

The sample was structured to ensure an even split between small, medium and large businesses, which was then weighted to the profile of UK businesses with 10 or more employees. Sector and region were broadly represented but some of the low incidence sectors or regions were boosted to match the profile of businesses at the previous wave carried out in 2011.

4.2 Location

As figure 4.1 shows, the English regions were broadly represented among businesses with BCS. Some of the low incidence regions were boosted to match the profile of the previous wave carried out in 2011. 2014 data was then weighted so that the profile of 2014 and 2011 businesses was matched within business size.

Almost 9 in 10 businesses with BCS were located in England, with 12% across Wales, Scotland and Northern Ireland.

A third (33%) of businesses were located in London and the South East. Large businesses were significantly more likely to be located in London (21% vs. 10% overall).

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Figure 4.1 Region

Nation / Region	
	All
Unweighted base	615
	%
North East	6
North West	12
Yorkshire and the Humber	5
East Midlands	10
West Midlands	5
East of England	9
South East (outside M25)	23
South West	8
London (inside M25)	10
ENGLAND	88
WALES	3
SCOTLAND	7
NORTHERN IRELAND	2

Base: All respondents with BCS n=615

Question: QS5 What part of the UK is the main UK office of your company located?

4.3   Industry sector & business size

As figure 4.2 shows, industry sector was broadly represented. Some of the low incidence sectors were boosted slightly to bring them in line with 2011 data and were then weighted so that the profile of 2014 and 2011 businesses was comparable.

Around a fifth (19%) of businesses with BCS were in Public Administration & Services, which includes local and central government organisations. The proportion of this category is significantly higher among large businesses (39% vs. 19% overall).

As we see in section 4.4, business size (employee numbers) clearly has a positive correlation with annual turnover (larger businesses have higher turnover) as does the number of sites or offices across which an organisation is spread (larger businesses have more).

Later in the report, we see that larger businesses also spend more on BCS, and have a requirement for higher bandwidths across their networks.

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Figure 4.2 Industry sector by business size

Business Size	Total	Small 10-100	Medium 101-500	Large 501+
Un-weighted base	615	191	229	195
	%	%	%	%
Sector				
Other services	27	28	16	14
Public admin & services	19	18	23	39
Wholesale/retail/ transport/communications	16	16	14	19
Manufacturing	15	15	15	8
Primary industry	7	7	7	2
Construction	6	6	7	3
Financial services	5	4	15	11
Other	5	5	3	3

Base: All respondents with BCS n=615

Question: QS4 Sector coded automatically from sample (telecoms was excluded)

4.4   Annual turnover

Figure 4.3 looks at the correlation between turnover and size of business (in terms of the number of employees). Respondents were asked to estimate their business's annual turnover (excluding any overseas turnover). Around a third (31%) either did not know or refused to answer. As expected, turnover correlates strongly with number of employees.

Figure 4.3 Size of business by annual turnover and number of employees
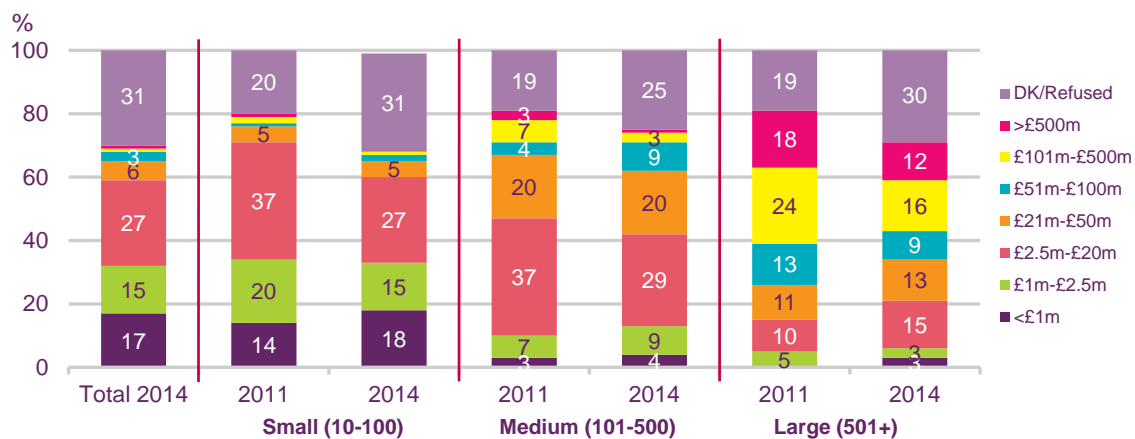
Base: All respondents with BCS 2011/2014 (Total n=615; Small n=152/191; Medium n=154/229; Large n=155/195)

Question: QA1 To the best of your knowledge what would you say is the annual turnover for your company?

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4.5 Number of sites/offices

Figure 4.4 shows that business size (by number of employees) is strongly correlated with the number of sites or offices across which an organisation is spread. Respondents were asked how many individual sites, outlets, branches and/or offices their business had in the UK. Any parent holding companies or other individual businesses within the group were to be excluded, along with any teleworking (e.g. from home).

More than half of small businesses only have one site (54%). The majority (62%) of medium sized businesses operates across fewer than 5 sites in the UK. Only 6% of large businesses have just one site.

The number of sites among each business size is broadly similar to 2011, however fewer large businesses have more than 100 sites in 2014.

Figure 4.4 Size of business by number of sites and number of employees
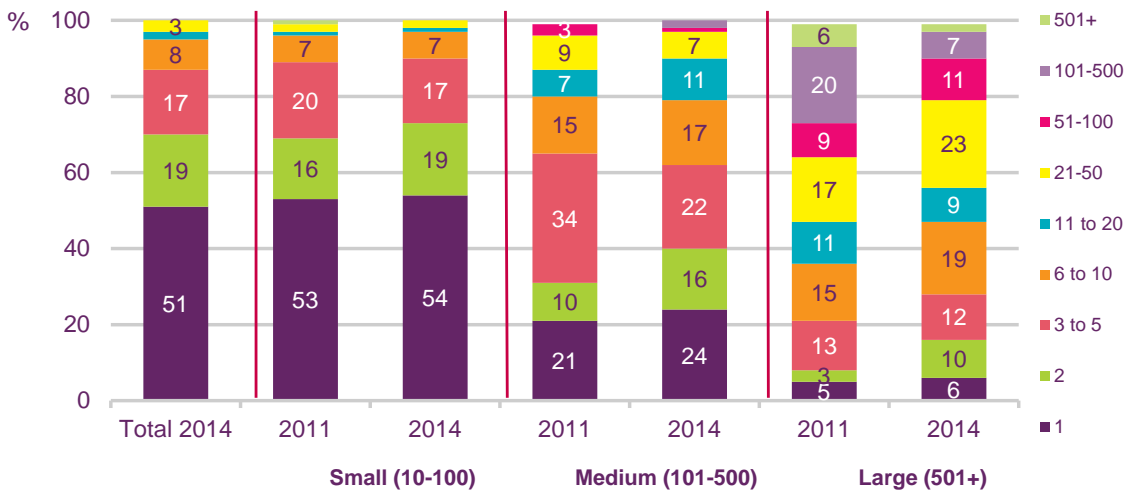
Base: All respondents with BCS 2011/2014 (Total n=615; Small n=152/191; Medium n=154/229; Large n=155/195)

Question: QA3 And how many individual sites, outlets, branches and or offices, including the one where you work does your company/organisation have in the UK?

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5. Business connectivity services & suppliers used

5.1 Summary

Annual spend on business connectivity is clearly correlated with business size; 17% of large businesses spend less than £50k, compared with 76% of small ones.

The majority of businesses manage the design and choice of network requirements as well as network management and monitoring in house, while outsourcing the installation and connection of their BCS.

In terms of suppliers, BT is the most widely used (56%), followed by Virgin Media (9%) and TalkTalk (6%). A number of other suppliers have 5% or less of the business customers in this market. 25% of businesses use multiple suppliers. Small businesses are less likely to do this, and large businesses more so.

Bandwidth requirements, number of connections and number of sites connected clearly correlate with business size; large businesses have a greater bandwidth requirement than small or medium ones and have more connections connecting more sites.

5.2 Incidence of BCS

While figure 3.4 looks at the incidence of ALL telecom services among **all UK businesses with 10 or more employees** (see section 3.4), figure 5.1 looks at the incidence of these services just **among users of any BCS** (who therefore qualified for the full survey).

The majority of businesses state that they have a VPN (64%), either underpinned by ADSL or Cable modem, or fibre broadband connection (59% of businesses), or underpinned by leased lines (33% of businesses). Use of VPNs correlates with business size, ranging from 62% among small businesses to 91% among large ones.

Around half (54%) have any type of leased line used either as a leased line or to underpin a VPN. Analogue leased lines (15%) are slightly more commonly used than digital (9%) and Ethernet (11%).

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Figure 5.1 Incidence of types of BCS (among those with any BCS)

%

BCS:
- Mobile/wireless in place of data over a fixed line — 68
- VPNs (any) — 64
- VPNs mainly underpinned by ADSL/cable modem — 59
- Leased Lines (any) — 54
- VPNs mainly underpinned by Leased Lines — 33
- EFM (Ethernet First Mile) — 20
- SDSL for some/all voice and/or some/all data — 19
- Leased Lines (Analogue) — 15
- Leased Lines (Ethernet) — 11
- Leased Lines (Digital) — 9

OTHER SERVICES:
- ADSL or Cable Modem or fibre broadband — 86
- ISDN Lines for voice and data — 59
- Regular PSTN telephone lines for voice — 45
- Internet access via dial-up — 14
- Other — 18

Base: All respondents with BCS n=615

Question: QS1a Thinking about your company's current telecoms provision for voice and data connectivity, which of the following types of telecoms services does your company have? QS1b What types of leased lines or other business connectivity services do you have? QS1c What types of leased lines or other business connectivity services do you have underpinning your VPN?

5.3   Overall spend on BCS

Respondents were asked to estimate how much their organisation spends annually on BCS within the UK, across all sites. They were asked to exclude spending on public telephone services and/or ISDN and/or dial-up internet, and to focus upon the whole organisation (not just parts that they may be responsible for).

Figure 5.2 shows that around three-quarters (74%) of businesses spend less than £50,000 per annum on BCS.

There is a clear correlation between business size/turnover and the amount spent on BCS. Large businesses with lots of employees spend more on BCS (presumably because they have more sites and employees and/or higher overall bandwidth requirements and therefore the need for more connectivity).

We see that around three-quarters (76%) of small businesses spend less than £50,000 on BCS in the average year and over two-thirds (70%) of medium sized businesses spend under £100,000. Only 17% of large businesses spend under £50,000. Spend by each business size band is similar between 2014 and 2011; although higher proportions claimed not to know in 2014, particularly among larger businesses.

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Figure 5.2 Annual spend on BCS (by number of employees)
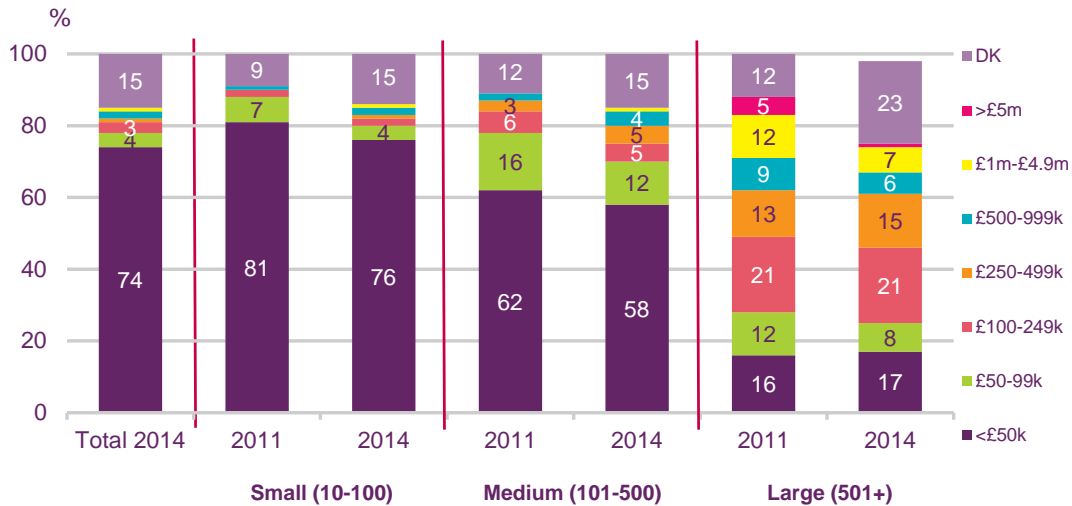
Legend (top to bottom):
- DK
- >£5m
- £1m-£4.9m
- £500-999k
- £250-499k
- £100-249k
- £50-99k
- <£50k

X-axis groupings: Total 2014 | Small (10-100) | Medium (101-500) | Large (501+)

5.4   How BCS are managed

Respondents were asked to consider how their organisation manages various aspects of their BCS, using the following levels:

- Completely outsourced
- Mainly outsourced (more than 50%) with some aspects done in-house
- Mainly in-house (more than 50%) with some aspects outsourced
- Fully in-house

Figure 5.3 shows that the majority of organisations manage the design and choice of network requirements as well as network management and monitoring in house; while outsourcing the installation and connection of their BCS. Results are similar across business size, although small businesses are somewhat more likely to completely outsource these elements.

Figure 5.3 Method of management of BCS
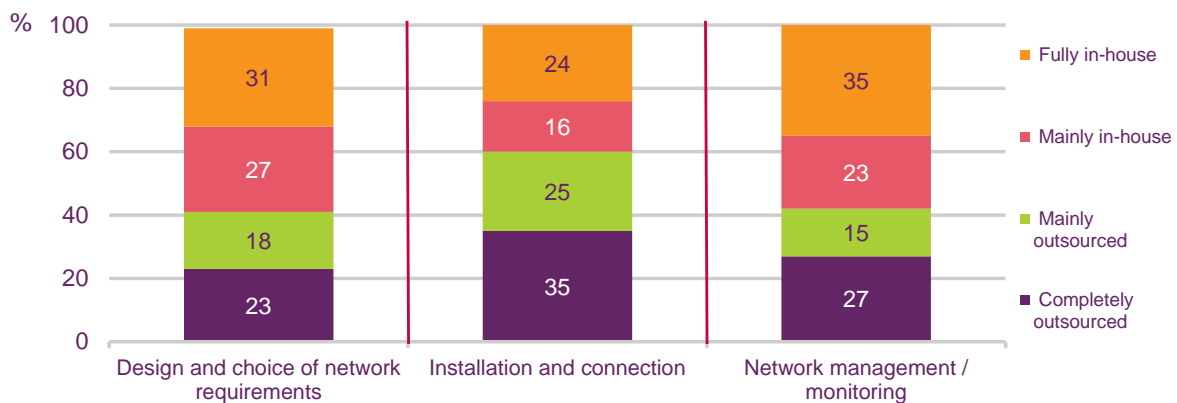
Legend:
- Fully in-house
- Mainly in-house
- Mainly outsourced
- Completely outsourced

	Completely outsourced	Mainly outsourced	Mainly in-house	Fully in-house
Design and choice of network requirements	23	18	27	31
Installation and connection	35	25	16	24
Network management / monitoring	27	15	23	35

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5.5   Suppliers used

Businesses were asked to name the telecom supplier(s) that their organisation uses for BCS across all of their sites.

Twenty-five per cent say they use more than one supplier, and 69% a single supplier for all BCS (6% did not know how many). The average number of suppliers used is 1.4 (rising to 1.6 among large businesses).

Figure 5.4 shows that 56% use BT for BCS. BT's key challengers for share of business customers with more than 10 employees are Virgin Media with 9% and TalkTalk with 6%. Multiple smaller suppliers hold less than 5% of the business customers in this market. While only making up 4% of the overall market, Vodafone is used by nearly one in ten (9%) large businesses.

Medium and large businesses are significantly more likely to use Virgin Media (21% and 20% respectively) than are small businesses (8%).

Figure 5.4 BCS suppliers used
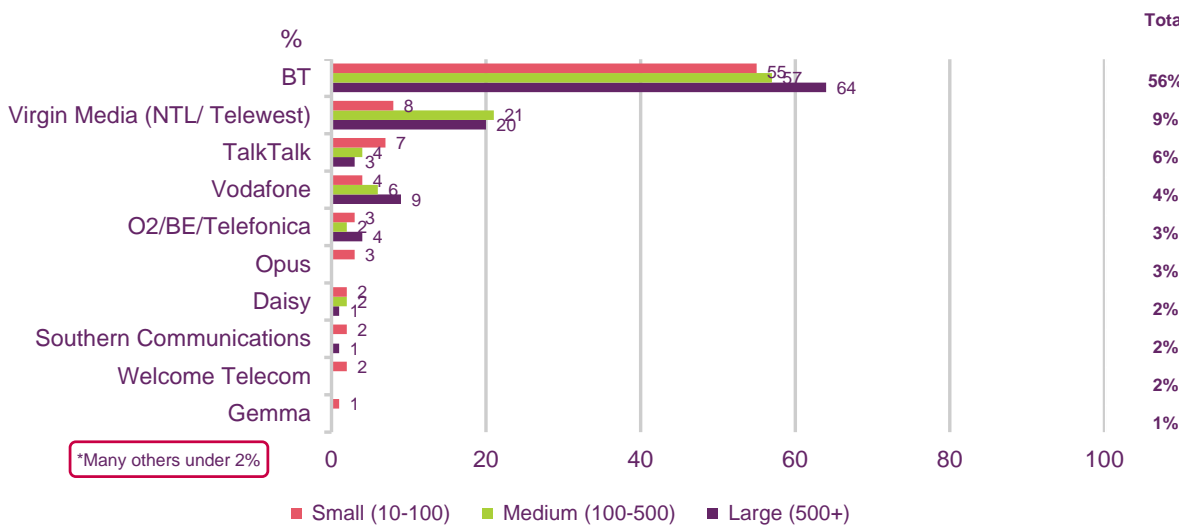
Base: All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)

Question: QB1 Which Telecoms supplier or suppliers does your organisation use for your business connectivity services across all your sites?

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Figure 5.5 offers some analysis by business size which shows that overall, large businesses are more likely than small ones to use multiple suppliers for BCS.

Two-fifths (38%) of large businesses use more than one supplier for BCS, compared with around a quarter (24%) of small businesses. On average, a small business uses 1.3 suppliers and a large business uses 1.6 suppliers.

Large businesses are significantly more likely than small ones to use BT alongside other suppliers (34% vs. 19%). Although among large users, 64% make use of BT in some way, either as a sole supplier (29%) or alongside others (34%).

Figure 5.5 Number of BCS suppliers used
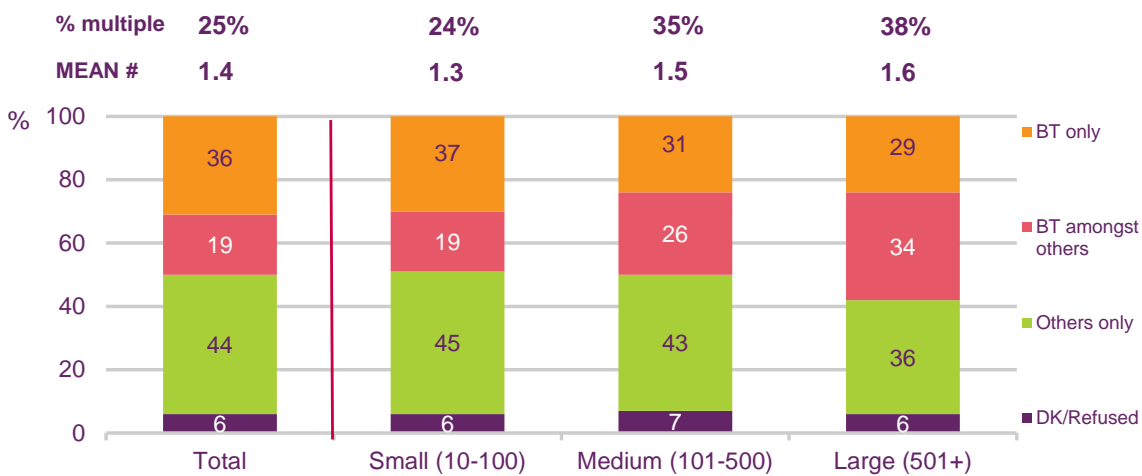
% multiple	25%	24%	35%	38%
MEAN #	1.4	1.3	1.5	1.6

Base: All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)

Question: QB1 Which Telecoms supplier or suppliers does your organisation use for your business connectivity services across all your sites?

5.6   Contention

Respondents were asked whether some or all of their business connectivity services are 'contended' (figure 5.6). If required, an explanation was provided that "the bandwidth is shared among multiple users rather than being dedicated or reserved to a single user".

Nearly two-thirds (63%) of businesses report having at least some services contended.

Figure 5.6 Whether some or all BCS 'contended'
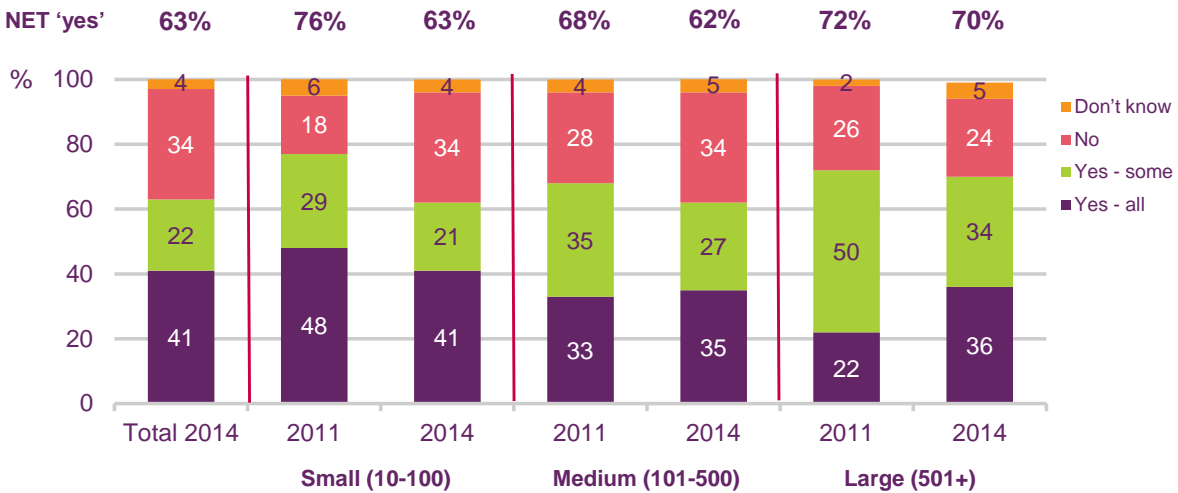
Base: *All respondents with BCS 2011/2014 (Total n=615; Small n=152/191; Medium n=154/229; Large n=155/195)*

Question: QB3 Are some or all of your business connectivity services 'contended'? In other words, the bandwidth is shared amongst multiple users rather than being dedicated or reserved to a single user.

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Respondents for whom some or all services are contended were asked whether the contention rate noticeably affects the quality of any of their BCS characteristics (figure 5.7).

Overall, half of those who claim to have contended services notice no impact. Download speed (42%) is the most mentioned issue, followed by upload speed (36%) and latency/jitter (25%). Large businesses are significantly more likely to experience any of these.[13]

Figure 5.7 Service characteristics noticeably affected by the contention rate
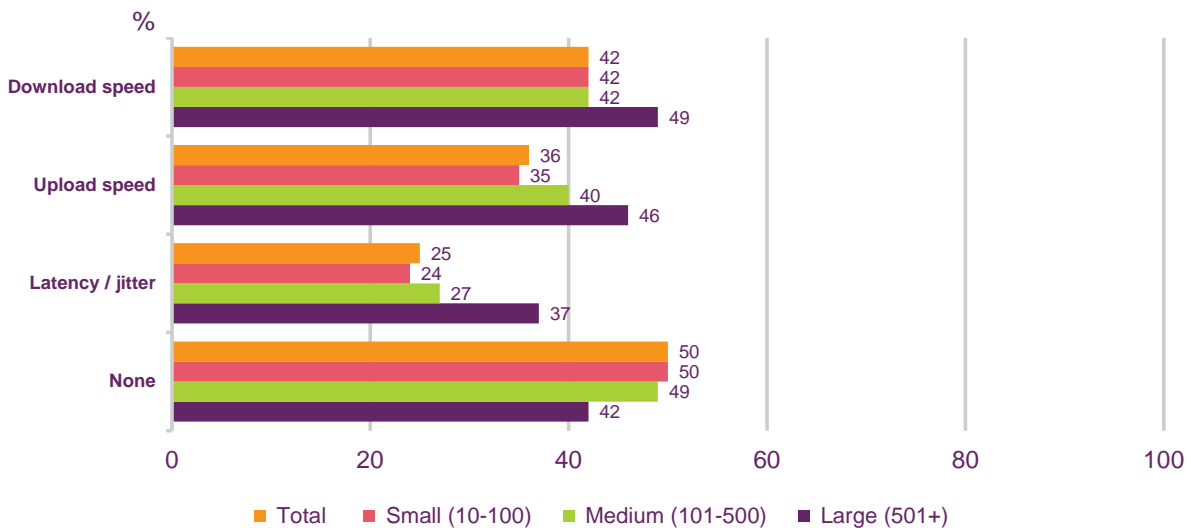
Base: All whose business connectivity services are "contended" (Total n=397; Small n=120; Medium n=141; Large n=136)

Question: QB3a You mentioned that some or all of your business services are contended. Do you feel that the contention rate noticeably affects the service quality of any service characteristics?

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[13] An example of contention issues was in case study 3, outlined in Appendix A

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5.7 Overall bandwidth available across all BCS

Respondents were asked to estimate the bandwidth available to their business for all types of BCS they used and an overall bandwidth available to their business for the whole of its BCS was calculated from this.

This method of estimating overall available bandwidth was new to the 2014 survey and therefore it is not possible to make any comparisons with businesses in 2011.

Figure 5.8 shows that a third (33%) of all respondents say their business has 11-49 Mbit/s of bandwidth. A further fifth (18%) have 50-155 Mbit/s.

Bandwidth requirements clearly correlate with business size. Only 3% claim to have more than 1 Gbit/s overall, but eight times as many (25%) require this in large businesses.

Among those with leased lines, more than one-third (36%) have 11-49 Mbit/s of bandwidth and more than one-fifth (22%) 50-155 Mbit/s.

A fifth of businesses (22%) are unable to estimate their bandwidth requirements.

Figure 5.8 Overall bandwidth available across all BCS
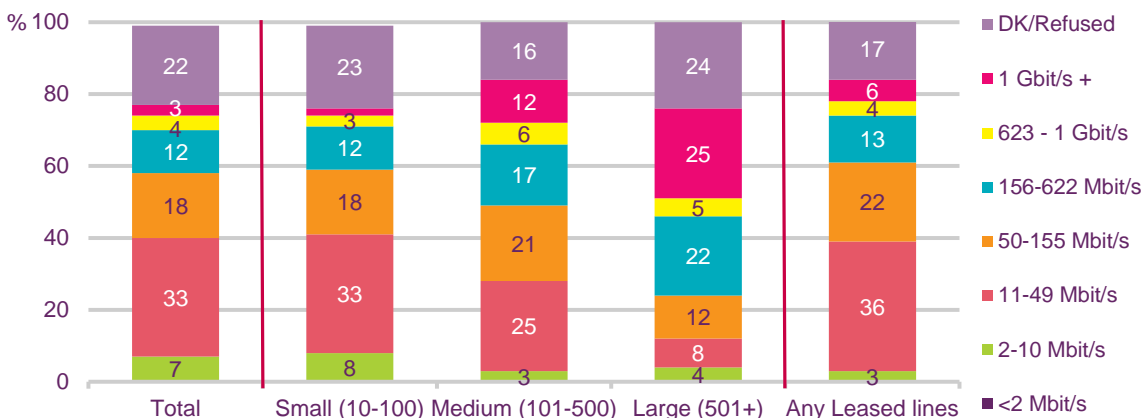
Base: All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195; Any leased lines n=403)

Question: QB2a For each of the following services that you use, which of the following bandwidths do you have? / QB2b And how many connections do you have to your business sites at each bandwidth?

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5.8   Number of BCS circuits/connections

Figure 5.9 looks at the number of BCS circuits/connections across all business sites.

The number of BCS connections increases with business size. Overall, over a quarter (26%) of businesses have just one connection, ranging from 27% of small businesses to 8% of large businesses. In contrast, 3% of small businesses have over 50 connections, compared to 24% of large business.

Figure 5.9 Number of BCS circuits/connections
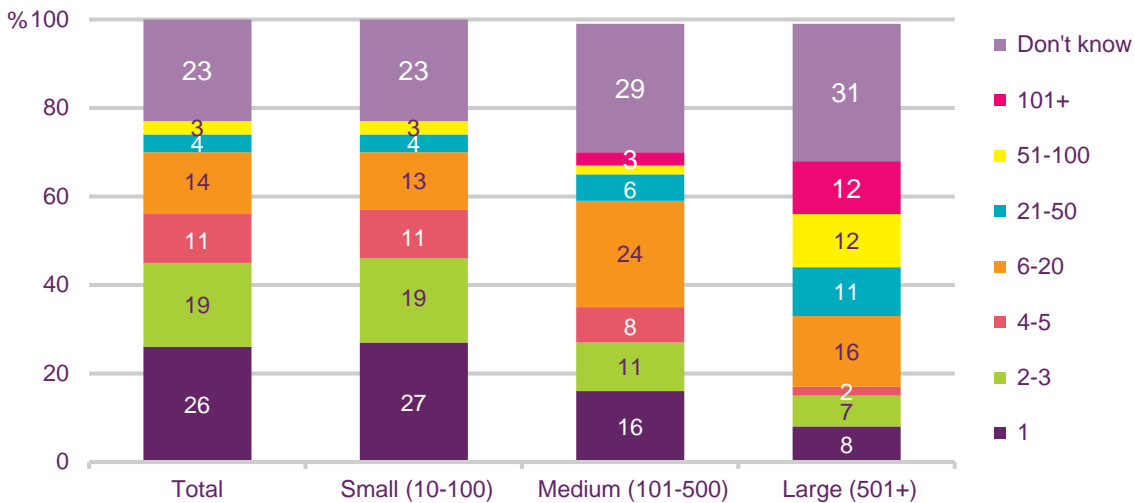
Base: *All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)*

Question: *QB4 We would like to know more details about the number of your business connectivity circuits/connections. Approximately how many circuits/connections do you have across all your business sites?*

5.9   Number of sites connected by BCS circuits/connections

As with the number of connections, the business sites connected by BCS circuits/connections increases with business size. Figure 5.10 shows that while half (53%) of small business have just 1 site connected, this drops to one-tenth (11%) among large ones, where nearly one in four (23%) have 30+ sites connected.

Figure 5.10 Number of sites connected by BCS circuits/connections
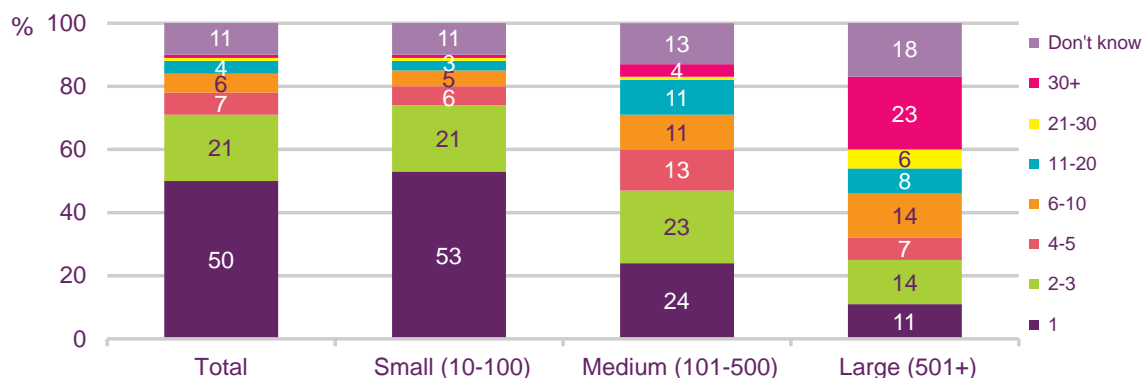
Base: *All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)*

Question: QB5 And how many sites does/do this/these circuit/s connections connect?

6. Focus on specific telecom service areas

This section focuses on the specific BCS telecom services used by businesses with 10 or more employees. It is important to note that at the beginning of each sub-section within this section (6.1 through 6.6), when we comment on the proportion of businesses using each of these services overall, it is based on <u>all</u> businesses with 10 or more employees, i.e. including those not using any BCS at all (as shown in Figure 3.4). This is in order to reflect real usage of these BCS services among UK businesses with 10 or more employees (not just those who have used at least one BCS).

6.1 VPNs

As shown in Figure 3.4, **42%** of <u>all businesses</u> with 10 or more employees have VPNs (either underpinned by cable modem/ADSL or leased lines access links).

Respondents were asked about bandwidths for the access links underlying VPNs, or (if unknown) the VPN bandwidth itself. Figure 6.1 shows that more than one-third (35%) claim to have VPNs with bandwidth of above 2 up to and including 10Mbit/s and one-quarter (27%) above 10 Mbit/s up to and including 45Mbit/s, with smaller proportions at lower or higher levels of bandwidth. Fifteen per cent could not estimate the bandwidth(s) of their VPN services.

Figure 6.1 VPN bandwidths
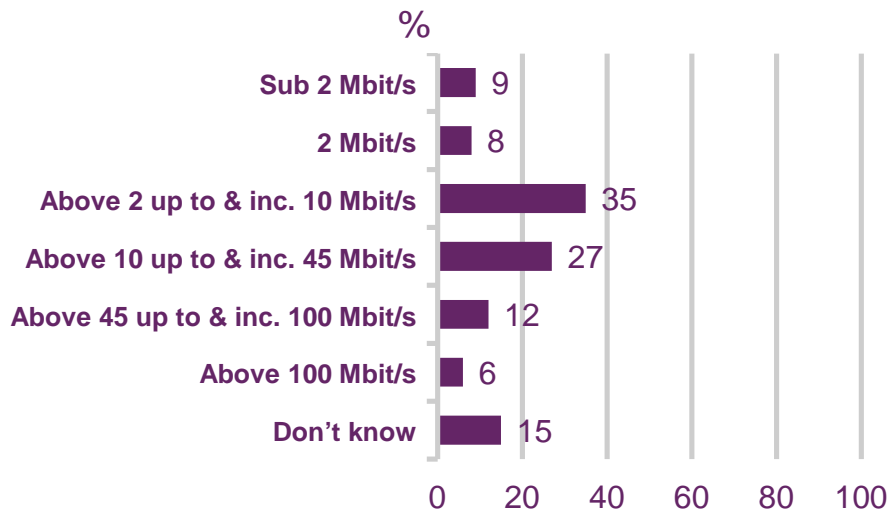
Base: All with VPNs regardless of type (n=480)

Question: QB2a For each of the following services that you use, which of the following bandwidths do you have?

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6.2 VPNs underpinned by ADSL or cable modem

As shown in figure 3.4, **39%** of <u>all businesses</u> with 10 or more employees have VPN(s) underpinned by ADSL or cable modem (rising to 63% among large businesses). Key suppliers of this type of VPN are BT (57%), Virgin Media (11%) and TalkTalk (6%).

Looking at specific usage (figure 6.2), data is clearly the core element of these VPNs, with three-quarters (74%) using them for email/internet, six in ten (59%) for remote access to enterprise networks and nearly half (45%) for shared enterprise applications or information.

Figure 6.2 What ADSL/cable modem VPN(s) used for (specific)
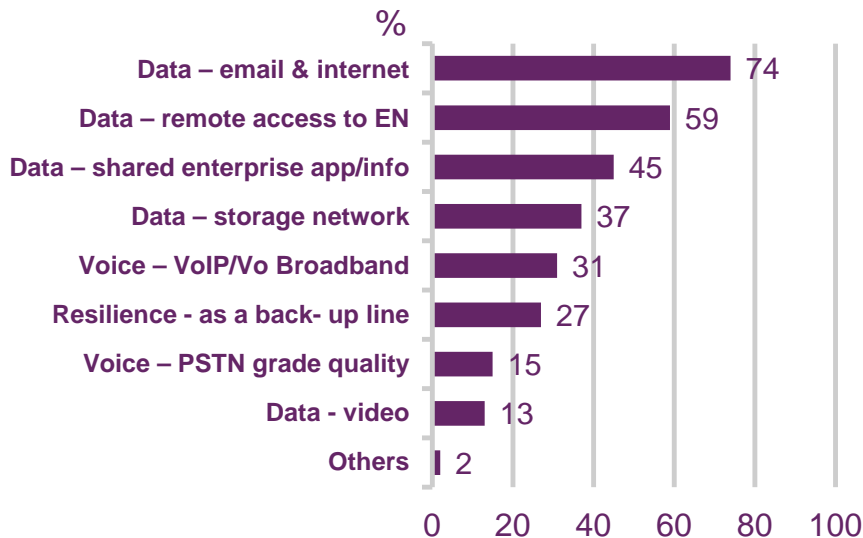
Base: All using VPNs underpinned by ADSL or cable modem (n=440)

Question: QA4 For each of these can you specify whether you use them for the following business uses?

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6.3   VPNs underpinned by leased lines access links

As shown in Figure 3.4, **22%** of <u>all businesses</u> with 10 or more employees have VPN(s) underpinned by leased lines access links (rising to 38% among large businesses). Key suppliers of this type of VPN are BT (60%), Virgin Media (9%), Opus (8%) and TalkTalk (7%).

Looking at specific usage (figure 6.3), data is clearly the core element of these VPNs, with seven in ten (71%) using them for email/internet, and more than half for remote access to enterprise networks (55%) or for shared enterprise applications or information (52%).

Uses for these VPNs are the similar to those underpinned by ADSL or cable modem.

Figure 6.3 What leased lines access links VPN(s) used for (specific)
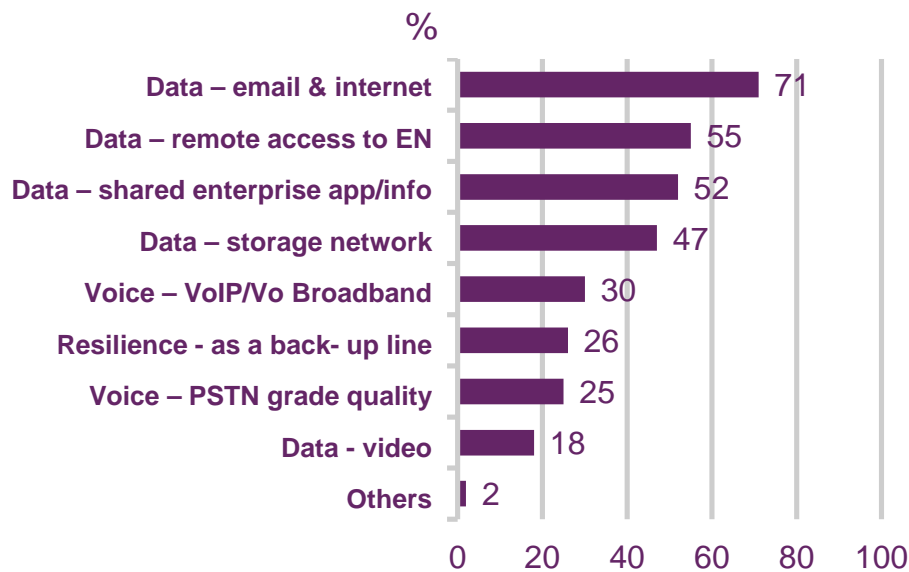
Base: All using VPNs underpinned by leased lines access links (n=268) *CAUTION LOW BASE*

Question: QA4 For each of these can you specify whether you use them for the following business uses?

6.4 SDSL

As shown in Figure 3.4, **13%** of <u>all businesses</u> with 10 or more employees have SDSL (rising to 20% among large businesses). Key suppliers of SDSL are BT (48%), Virgin Media (9%), Claranet (5%) and Chess (4%).

Looking at specific usage (figure 6.4), data is clearly the core element to respondents with SDSL, with three-quarters (74%) using them for email/internet and around two-fifths for remote access to enterprise networks (38%) and VoIP/VoB (37%).

Figure 6.4 What SDSL used for (specific)
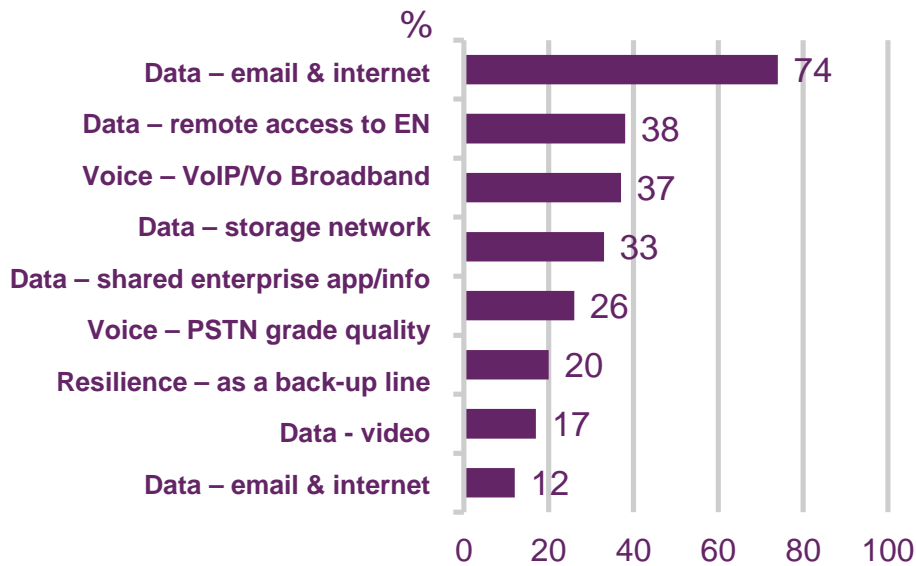
Base: All using SDSL (n=145*) *CAUTION LOW BASE*

Question: QA4 For each of these can you specify whether you use them for the following business uses?

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Figure 6.5 examines the different bandwidths businesses have for SDSL. Over a third could not estimate this, the lowest level of knowledge for any BCS asked about. Figure 6.6 shows that 2 in 5 (39%) have SDSL with bandwidth of 2-10 Mbit/s (inclusive), with smaller proportions at lower or higher levels of bandwidth.

Figure 6.5 SDSL bandwidths
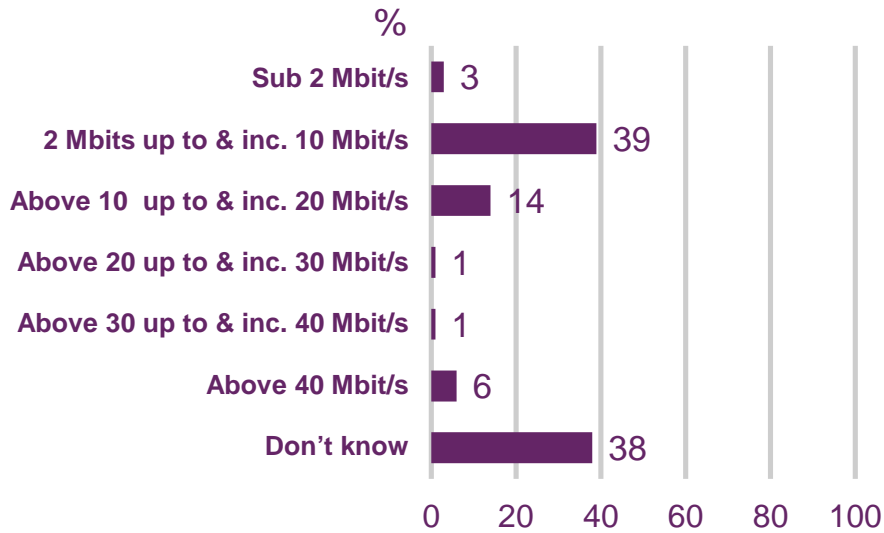
Base: *All using SDSL (n=145*) *CAUTION LOW BASE*

Question: QB2A For each of the following services that you use, which of the following bandwidths do you have?

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6.5 SDH/PDH digital leased lines

As shown in Figure 3.4, **5%** of <u>all businesses</u> with 10 or more employees have SDH/PDH digital leased lines (rising to 15% among large businesses). Key suppliers of digital leased lines are BT (52%), Vodafone (13%), Opus (10%) and Virgin Media (9%).

Looking at specific usage (figure 6.5), data is the core element, with around three in five (58%) using SDH/PDH digital leased lines for email & internet and one-third for remote access to enterprise networks (33%) and for shared enterprise applications or information (31%).

Figure 6.5 What digital SDH/PDH leased lines used for (specific)
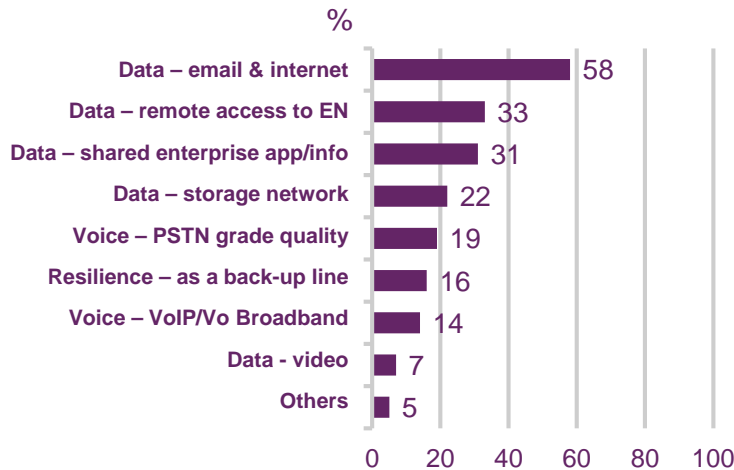
%

Data – email & internet	58
Data – remote access to EN	33
Data – shared enterprise app/info	31
Data – storage network	22
Voice – PSTN grade quality	19
Resilience – as a back-up line	16
Voice – VoIP/Vo Broadband	14
Data - video	7
Others	5

*Base: All using Digital (SDH/PDH) Leased Lines (n=100**) **CAUTION VERY LOW BASE*

Question: QA4 For each of these can you specify whether you use them for the following business uses?

Figure 6.6 examines the different bandwidths that businesses with 10 or more employees have for SDH/PDH digital leased lines. One-quarter (24%) could not estimate this. One third (33%) have digital leased lines with bandwidth of above 2, up to and including 34 Mbit/s, with smaller proportions at lower or higher levels of bandwidth.

Figure 6.6 Digital (SDH/PDH) leased lines bandwidths
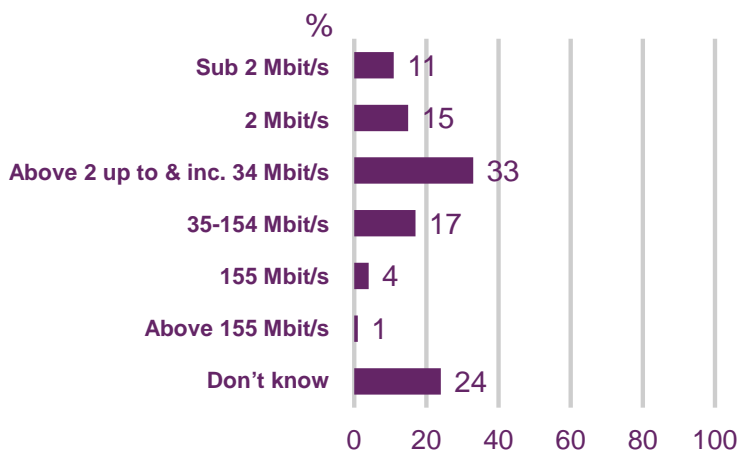
%

Sub 2 Mbit/s	11
2 Mbit/s	15
Above 2 up to & inc. 34 Mbit/s	33
35-154 Mbit/s	17
155 Mbit/s	4
Above 155 Mbit/s	1
Don't know	24

*Base: All using Digital (SDH/PDH) Leased Lines (n=100**) **CAUTION VERY LOW BASE*

Question: QB2A For each of the following services that you use, which of the following bandwidths do you have?

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6.6   Ethernet leased lines

As shown in Figure 3.4, **7%** of <u>all businesses</u> with 10 or more employees have Ethernet leased lines (rising to 20% among large businesses). Key suppliers of Ethernet leased lines are BT (63%), Virgin Media (16%), TalkTalk (8%) and Opus (8%).

Looking at specific usage (figure 6.7), data is clearly the core element of Ethernet leased lines use, with eight in ten (80%) using them for email/internet and around half for remote access to enterprise networks (55%) and shared enterprise applications or information (50%).

Figure 6.7 What Ethernet leased lines used for (specific)
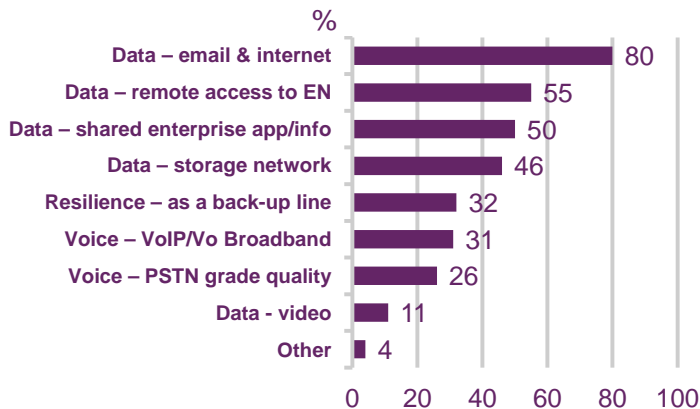
Base: All using Ethernet Leased Lines (n=128) *CAUTION LOW BASE*

Question: QA4 For each of these can you specify whether you use them for the following business uses?

Figure 6.8 examines the different bandwidths businesses with 10 or more employees have for Ethernet leased lines. More than 1 in 10 (15%) could not estimate this. Around two-fifths (37%) have Ethernet leased lines with bandwidth of above 10 up to and including 100 Mbit/s, with smaller proportions at lower or higher levels of bandwidth.

Figure 6.8 Ethernet leased lines bandwidths
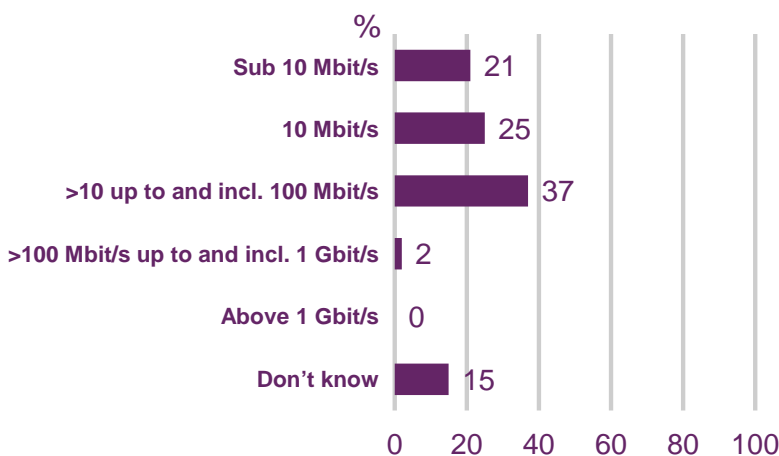
*Base: All using Ethernet Leased Lines (n=128*) *CAUTION LOW BASE*

Question: QB2A For each of the following services that you use, which of the following bandwidths do you have?

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7. Business needs

7.1 Summary

The most important features for businesses when making decisions about BCS are **availability** (a measure of reliability), **resilience** (an option for a second data path to provide higher availability) and **bandwidth – both download and upload speed**.

Availability has by far the greatest importance for businesses, with nearly twice the level of importance than the next most important service element, **resilience**.

Businesses say **bandwidth (both upload and download speed)** are most likely to increase in future importance. Around half say that these will become more important over the next three years.

Availability, **resilience** and **latency** are expected to become more important over the next three years by less than half of all businesses overall (43%, 35% and 27% respectively). However, these elements are expected to be significantly more important among medium and large businesses than small ones:

- 61% of large businesses and 56% of medium businesses think **availability** will become more important vs. 42% of small businesses
- 56% of large businesses and 53% of medium businesses think **resilience** will become more important vs. 34% of small businesses
- 39% of large businesses and 41% of medium businesses think **latency** will become more important vs. 26% of small businesses.

The majority of businesses **review value-for-money** or service quality at least every 2-3 years and nearly three in five go to formal tender within the same period.

Around one-third of businesses have changed supplier and one-fifth the technology/service underpinning their BCS. The main drivers to change for both are **cost**, **speed** and **reliability**, although cost appears to be the key influence when changing **supplier** while for **service/technology** changes, service factors have a greater role.

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7.2 Relative importance of different service features when deciding on services

An aim of the research was to understand the relative importance of various service features to businesses when making decisions about the business's BCS.[14]

If respondents were simply asked to rate service features on how important they are, it could be difficult to see any differentiation or hierarchy, as all *may* be thought of as 'important'. Therefore a technique called '**Max Diff**' was used (also known as pairwise comparisons, or stated importance), which forces a choice for respondents and produces a hierarchy of importance.

Respondents were asked to select the most important feature from a series of pairs. The pairs were pre-selected using a statistical process to ensure that all elements were covered to provide an adequate trade off to give a score for each element. The question in this survey was as follows. Respondents were allowed the option to say both elements were equally important.

> *"We'd like to know which aspects of the technology underpinning your company's business connectivity services are most and least important to your business. I am going to read out a number of pairs of attributes of the technology and ask you to choose which of each pair is more important to you when making decisions about the services your company uses."*

The service features asked about were:

- Dedicated connection (reserved for one user)
- Bandwidth - download speed
- Bandwidth - upload speed
- Symmetry (guarantees same upload and download bandwidth)
- Availability (a measure of reliability)
- Resilience (provides option for a second data path to provide higher availability)
- Latency (a measure of the end to end delay in transmission of data)
- Jitter (a measure of variation of delay in transmission of data)
- Range (the distance between end-user premises over which the service is available)

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[14] Some examples of the importance of different BCS service features considered by businesses were discussed in case study interviews 1 and 3, outlined in Appendix A

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Importance ranking

Results were then analysed and a ladder of importance produced (Figure 7.1). In order to establish a hierarchy based on their scores, attributes have been grouped into 'top' importance, 'middle range' and 'low'.

Importance rankings take the form of a ratio scale, which means, for example, that an attribute scoring twice that of another is twice as important. Using this classification, areas of most importance to businesses are **availability**, **resilience** and **bandwidth – both download and upload speed** with scores of 38.8, 20.7, 13.2 and 9.7 respectively. This indicates that **availability** has by far the greatest level of importance with nearly twice the relative importance of the next attribute.

We found no significant differences in ratings by business size.

Figure 7.1 Relative importance of service features
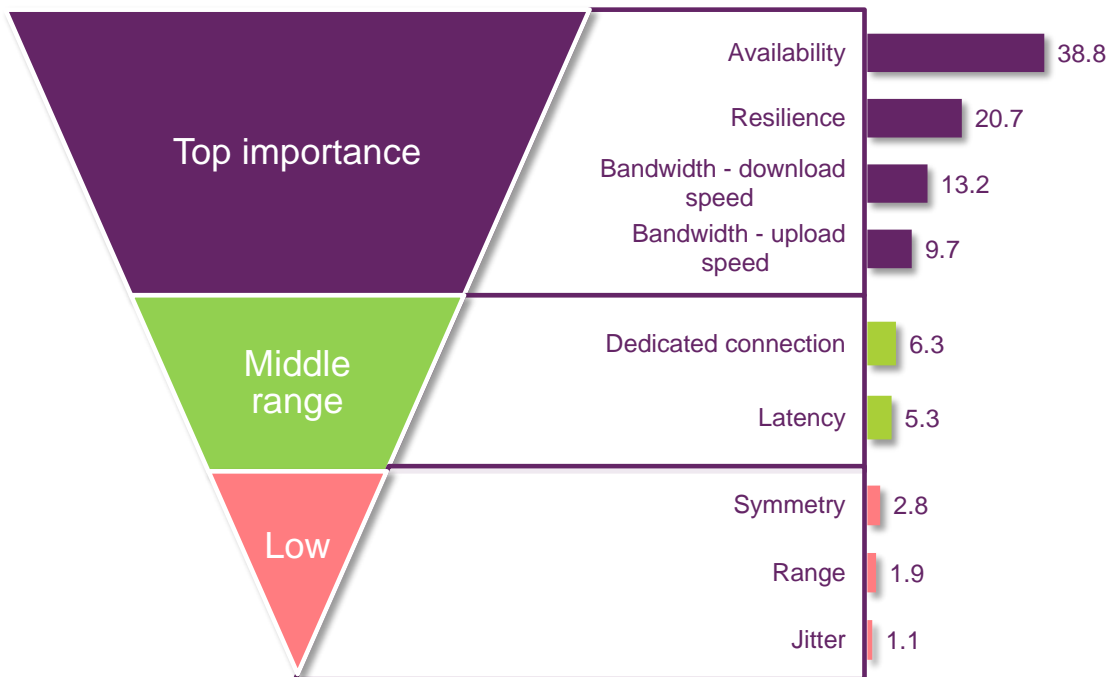
Base: All respondents with BCS (n=615)

Question: QE1 We'd like to know which aspects of the technology underpinning your company's business connectivity services are most and least important to your business.

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7.3   Anticipation of changes in future importance over the next 3 years

Using the same list and definitions of service features, respondents were then asked to think about the business connectivity requirements of their business <u>over the next three years</u>, and consider whether these service features were likely to become more important, less important or to stay about the same.

Figure 7.2 shows which service features respondents feel will grow in terms of importance to business connectivity. In contrast to those currently seen to be most important, respondents feel that **bandwidth** (both download and upload speed) is the area most likely to grow in importance in the next 3 years (53% and 51% respectively).[15]

Figure 7.2 shows that while at an overall level under half of businesses expect **availability**, **resilience** and **latency** to become more important to their business over the next three years (43%, 35% and 27% respectively), these elements are expected to be significantly more important among medium and large businesses than small ones:

- 61% of large businesses and 56% of medium businesses think **availability** will become more important vs. 42% of small businesses
- 56% of large businesses and 53% of medium businesses think **resilience** will become more important vs. 34% of small businesses
- 39% of large businesses and 41% of medium businesses think **latency** will become more important vs. 26% of small businesses.

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[15] Some examples of the changing importance of different BCS service features considered by businesses were discussed in case study interviews 1 and 3, outlined in Appendix A

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Figure 7.2 Features of BCS that will increase in importance over next 3 years

%   Total

Feature	Small (10-100)	Medium (101-500)	Large (501+)	Total
Bandwidth - download speed	52	61	59	53%
Bandwidth - upload speed	50	53	50	51%
Availability	42	56	61	43%
Resilience	34	53	56	35%
Latency	26	41	39	27%
Dedicated connection	24	27	27	24%
Range	22	25	26	22%
Symmetry	19	23	26	20%
Jitter	17	25	27	17%

■ Small (10-100)   ■ Medium (101-500)   ■ Large (501+)
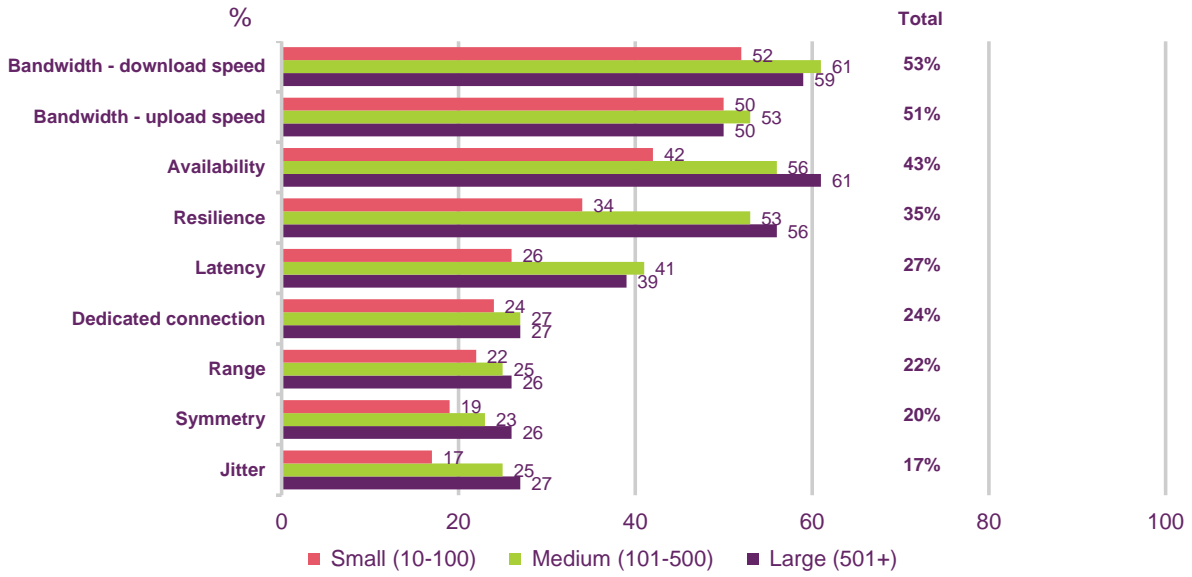
Base: All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)

Question: QE2 Now thinking about your business connectivity requirements for the next three years please state whether each of these same service features is likely to become more important, less important or stay about the same in importance to your business?

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7.4   Reviews & changes to suppliers & services

Respondents were asked how frequently they carried out a range of activities to ensure their BCS are cost efficient and of sufficient quality.[16]

Figure 7.3 shows that the majority of businesses review value-for-money (85%) or service quality (85%) at least every 2-3 years and nearly three in five (57%) go to formal tender within the same period.

These activities were carried out with similar levels of frequency across business sizes.

Figure 7.3 Activities undertaken to ensure BCS are of sufficient quality and cost efficient
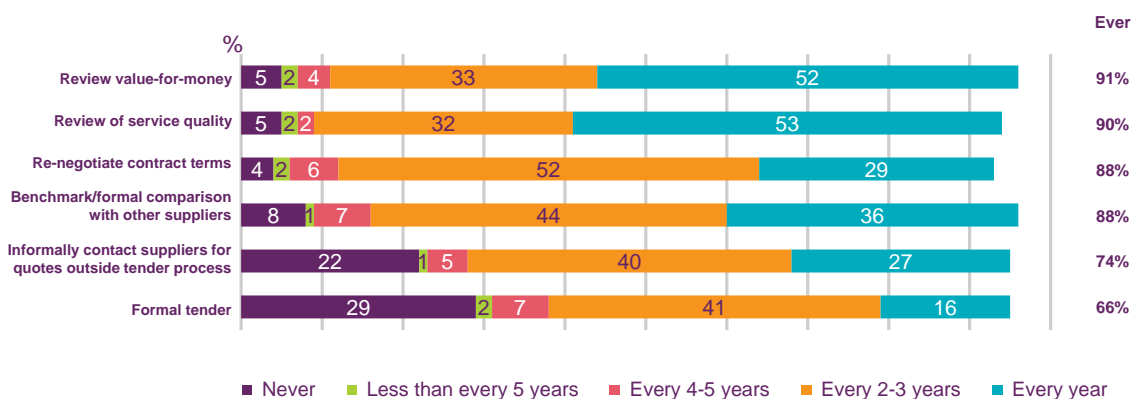
Base: All respondents with BCS (n=615)

Question: QH1 How often do you carry out each of the following with respect to your supplier(s) of business connectivity services?

Figure 7.4 shows that among various changes made to BCS in the last three years, an active decision to change service speed was the most common (38%). Large businesses are significantly more likely to have changed their quality of service parameters; around one-third (30%) has done so compared to around one-fifth of medium (22%) or small (20%) ones.

Overall, around one-third (32%) have changed BCS **supplier** and one-fifth (26%) the **technology/service** underpinning their BCS.

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[16] Some examples of the activities undertaken to ensure BCS are cost efficient and of sufficient quality were discussed in case study interviews, outlined in Appendix A

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Figure 7.4 Changes made in relation to BCS in the last 3 years

%

Actively chose to change your speed
- 38
- 38
- 41
- 45

Contract terms
- 32
- 32
- 28
- 33

Business connectivity service supplier
- 32
- 32
- 33
- 30

Service/technology underpinning your company/organisation/ department's business connectivity services
- 26
- 26
- 29
- 30

Quality of service parameters, i.e. your service level agreement
- 21
- 20
- 22
- 30

0   20   40   60   80   100

■ Total ■ Small (10-100) ■ Medium (101-500) ■ Large (501+)
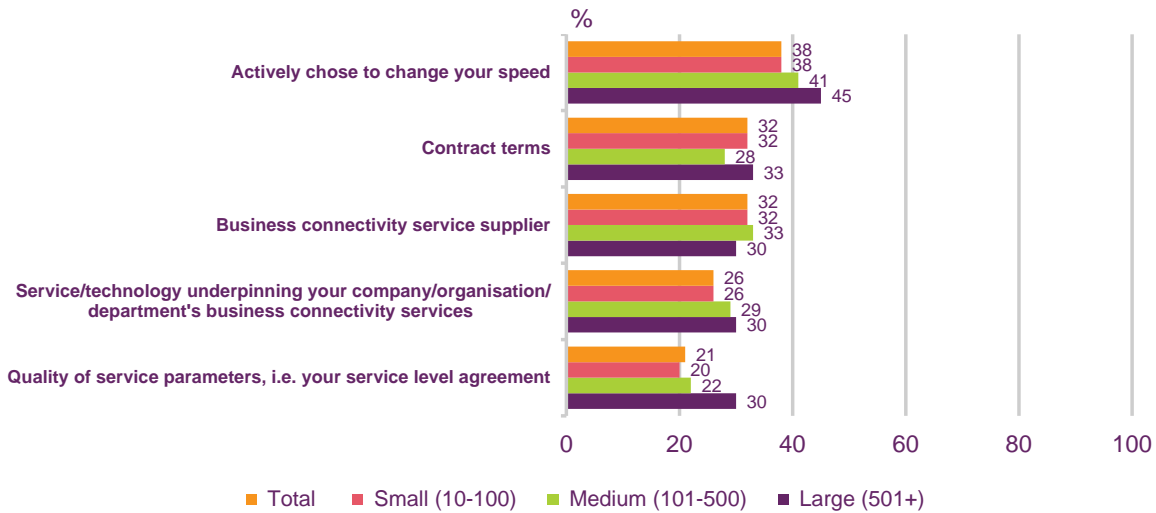
Base: All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)

Question: QH3 Have you made changes to any of the following in relation to your business connectivity services in the last three years?

7.4.1   Changing <u>service/technology</u>

The 26% of businesses changing the **service/technology** underpinning their BCS in the last three years were asked what had been the key factors driving them to do so. Figure 7.5 shows that speed (48%), cost (44%) and reliability (35%) are the key drivers to change.

Figure 7.5 Drivers to change service/technology (among those changing)

%

- Speed — 48
- Cost — 44
- Reliability — 35
- Security — 19
- Moving premises — 6
- Quality of service — 2
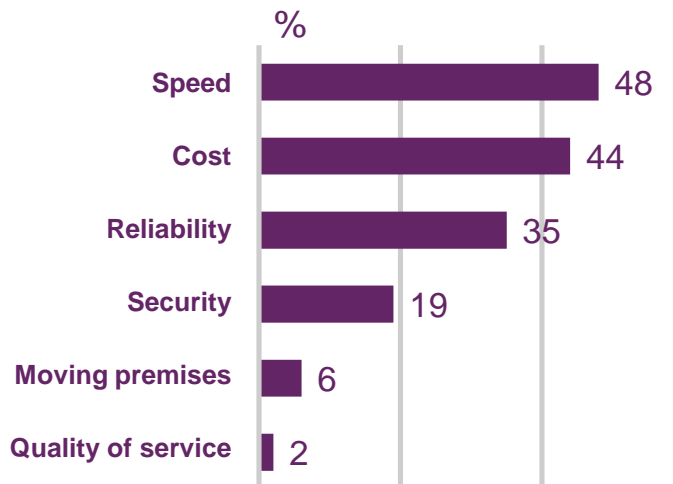
Base: All changing service (n=126)*CAUTION LOW BASE*

Question: QH4 What prompted you to make a change to your service/technology?

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Sixty per cent of those changing **service/technology** considered alternative types, with the main ones cited being leased lines generally (16%), ADSL (10%), Fibre (6%) and SDSL (6%). As figure 7.6 shows, price is the main factor for deciding on the chosen service (for 45%), although changing business requirements is also a consideration (for 31%).

Figure 7.6 Reasons for selecting service/technology chosen (among those considering alternative types)

%

Price	45
Changing business requirements	31
Perceived quality	18
Value for money	17
Security	16
Resilience	13
Easier to operate/maintain/fix	9
Bundled with other services	7
Service features	7
Speed	6
Other	13
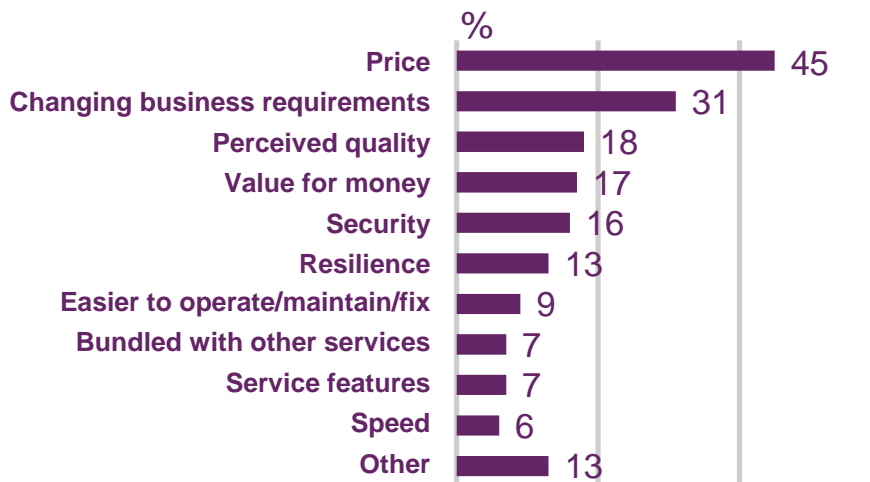
Base: *All changing service (n=126*) *CAUTION LOW BASE*

Question: *QH6 What were the key factors driving you to select one business connectivity service type over the others at this time?*

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Those changing their **service/technology** were asked to assess the impact of doing so on costs (internal and external) and quality of service.

Figure 7.7 shows that while equal proportions saw an increase or decrease in **external** costs (32% and 33% respectively) and similarly equal proportions saw an increase or decrease in **internal** costs (23% and 22% respectively), the impact on quality of service was positive for the large majority with four-fifths (80%) reporting this.

One in five (22%) of those changing **service/technology** had substantial one-off costs associated with the switch, the most mentioned being hardware or new equipment (6%) and installation costs (2%).

Figure 7.7 Impact of changing service/technology
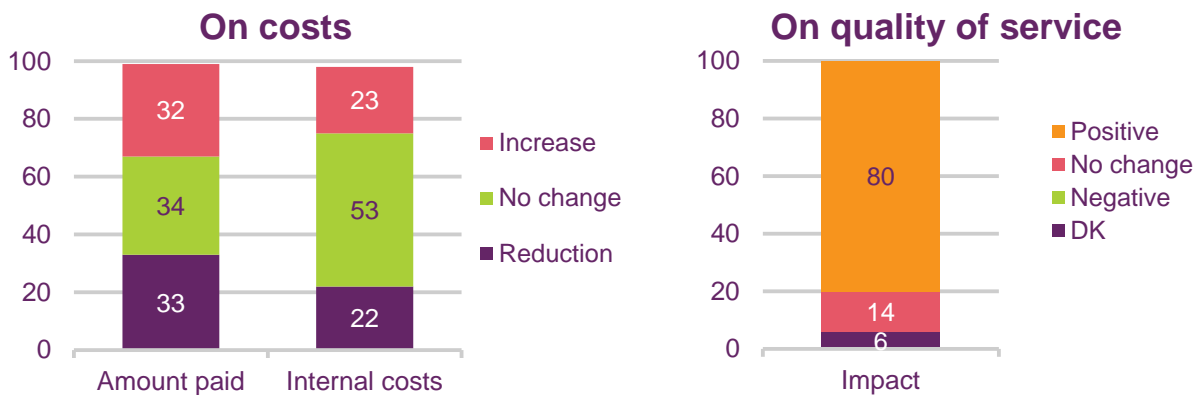
Base: All changing service (n=126) *CAUTION LOW BASE*

Question: QH7 What impact did switching your service/technology have on the amount you pay for your business connectivity services? / QH8 And what impact did switching your service/technology have on internal costs? / QH9 What impact did switching your service/technology have on your quality of service?

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7.4.2 Changing supplier

The 32% of businesses changing **supplier** in the last three years were asked what had been the key factors driving them to do so. Figure 7.8 shows that cost (58%), speed (42%) and reliability (35%) were the key drivers to change.[17]

Figure 7.8 Drivers to change supplier (among those changing)

%

Driver	%
Cost	58
Speed	42
Reliability	35
Unhappy with existing	31
Security	14
Product not available from existing	11
Product withdrawn by supplier	9
Repair times	7
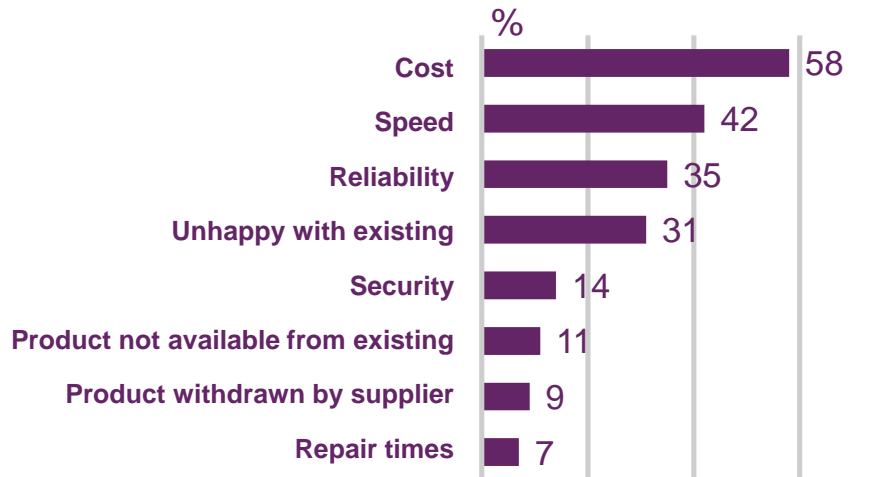
Base: All changing supplier (n=126) *CAUTION LOW BASE*

Question: QH10 What prompted you to make a change to your supplier?

Forty-two per cent of those changing **supplier** considered alternatives, with the main ones cited being BT (21%), Virgin Media (10%) and Vodafone (10%). As figure 7.9 shows, price is by far the strongest influence for deciding on the chosen service, mentioned by two-thirds (66%). The next factor, reputation for quality, was reported by just over one-third (36%).

Figure 7.9 Reasons for selecting supplier chosen (among those considering alternatives)

%

Reason	%
Price	66
Reputation for quality	36
Attractive bundling	23
Good contacts at chosen company	23
Better security	16
Better resilience	10
Historic links to chosen company	10
Supplier(s) understand our business	6
Length of agreement	5
Other	10
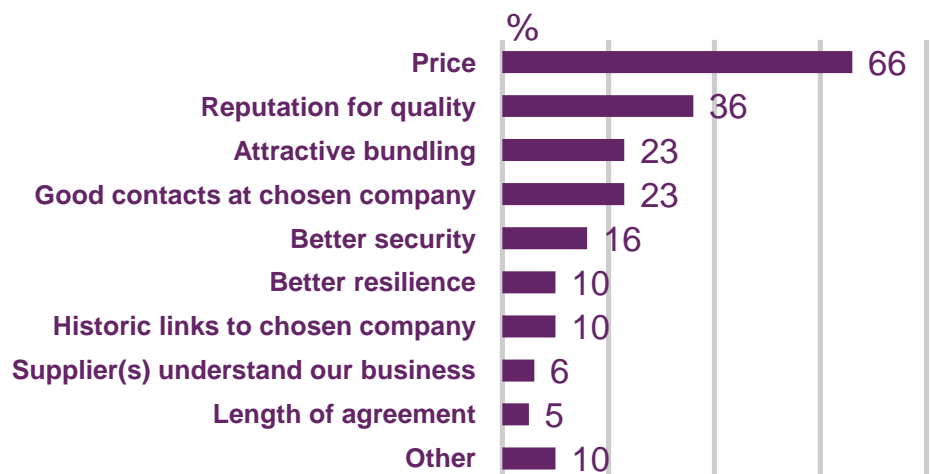
Base: All changing supplier (n=126) *CAUTION LOW BASE*

Question: QH12 What were the key factors driving you to select one service provider over the others?

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[17] Some examples considerations when changing supplier were discussed in case study interviews, outlined in Appendix A

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Those changing their **supplier** were also asked to assess the impact of doing so on costs (internal and external) and quality of service.[18]

Figure 7.9 shows after changing **supplier**, three-fifths (59%) of businesses moving to a new supplier saw a reduction in the amount paid for their service and two-fifths (40%) lower internal costs; while at the same time two-thirds (63%) reported a positive impact on their quality of service.

Figure 7.9 Impact of changing supplier
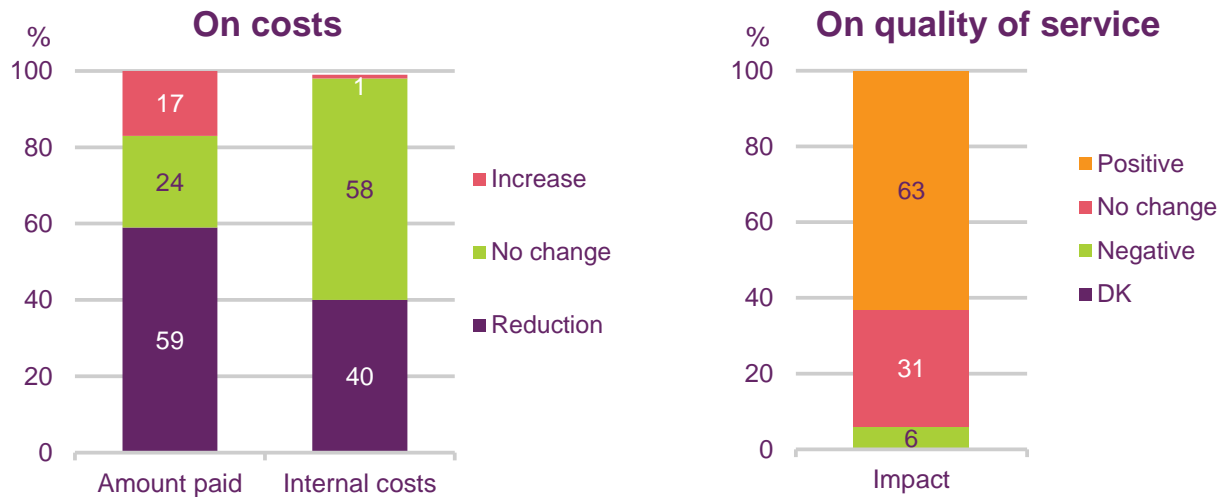
Base: *All changing supplier (n=126*) *CAUTION LOW BASE*

Question: *QH13 What impact did switching supplier have on the cost of your business connectivity services? / QH14 And what impact did switching supplier have on internal costs? / QH15 What impact did switching supplier have on your quality of service?*

The lower impact overall on the amount paid when switching **service/technology** and higher impact on quality of service compared to the impact of switching **supplier**, suggests costs are a more dominant driver for changing the **supplier**, while for **service/technology** this is driven by a mix of factors.

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[18] Some examples of the impact of changing supplier were discussed in case study interviews 2 and 3, outlined in Appendix A

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7.5   Review process

7.5.1   Type of service sought

Respondents were asked what type of BCS they looked for at their last review and whether these were bespoke or off-the-peg solutions. Figure 7.10 shows that standard/off the peg offers dominate with, overall, around half (52%) of businesses seeking these.[19]

However, among large businesses, tailored or bespoke offers are more prevalent. Two in five (42%) sought a bespoke offer and one in five (21%) a bespoke one combined with a standard or off the peg offer, while just one in five (27%) looked for a standard offer alone.

Figure 7.10 Type of BCS looked for at their last review
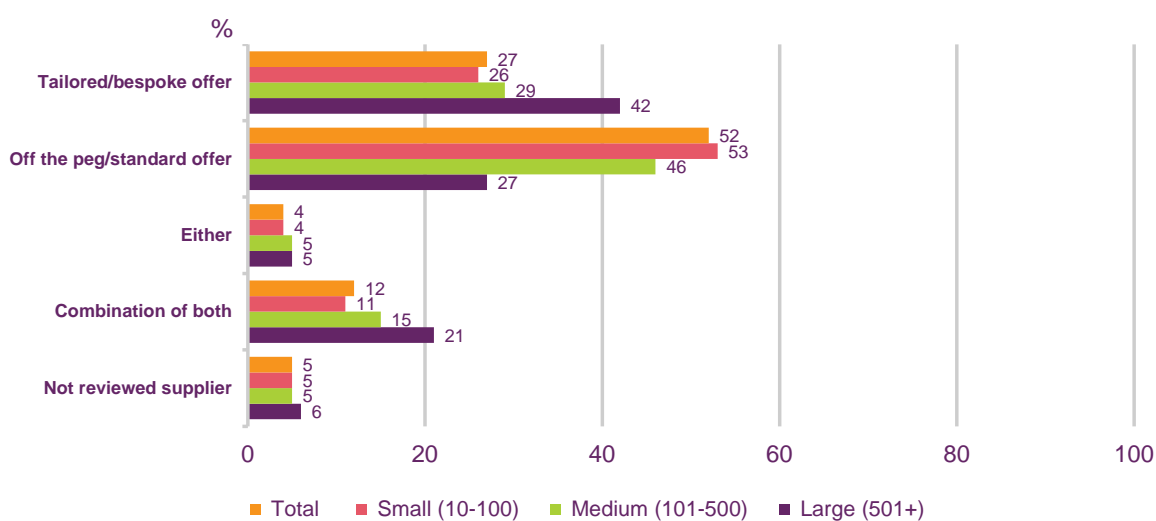
Base: All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)

Question: QJ1 When you last reviewed whether to change supplier or business connectivity service, were you looking for a bespoke service or was it an off-the-peg/standard offer?

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[19] Some examples of the review process undertaken by businesses were discussed in case study interviews, outlined in Appendix A

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7.5.2 Selection process

Businesses encounter a variety of channels when undertaking their review. As figure 7.11 shows, overall, similar proportions go direct to the website of their preferred supplier (29%), follow a formal tender process (23%), are approached by the supplier themselves (21%) or renegotiate with an existing supplier (20%).

Large businesses are most likely to follow a formal tender process (42%) than any other method.

Figure 7.11 Selection process followed at last review
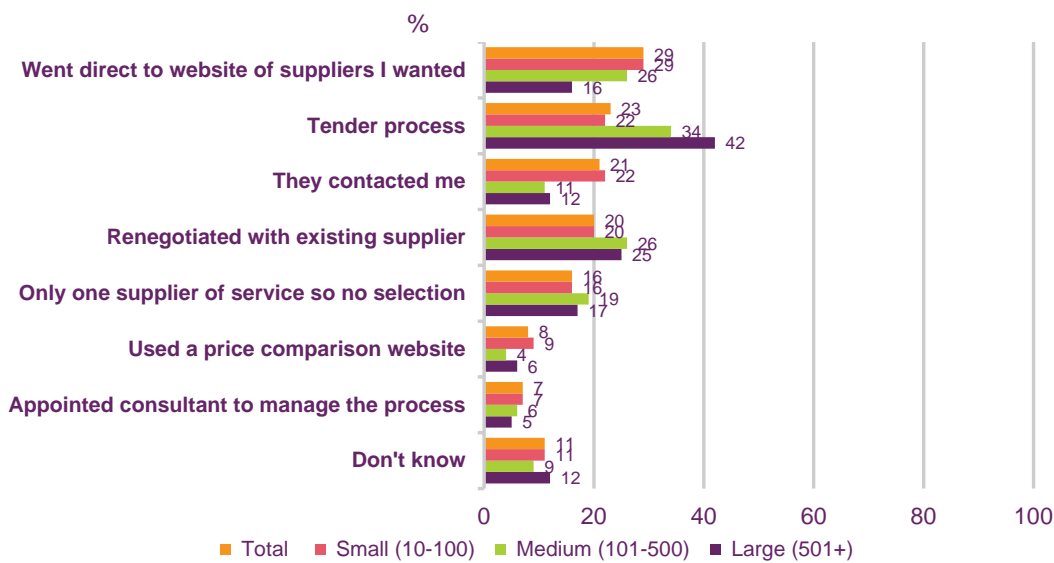
Base: *All who reviewed/changed supplier/service (Total n=582; Small n=180; Medium n=218; Large n=184)*

Question: *QJ2 And what was the selection process you followed?*

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7.5.3 Number of suppliers approached & that responded

Figure 7.12 shows at an overall level, businesses were most likely to approach 2-3 suppliers at their last review (42%).

Large businesses approached significantly more suppliers on average compared to both medium and small ones (3.7 suppliers compared to 2.9 and 2.7 respectively) and those large businesses approaching at least one supplier had a significantly higher proportion respond (3.7 compared to 2.8 and 2.8 respectively).

Figure 7.12 Number of suppliers approached/responded
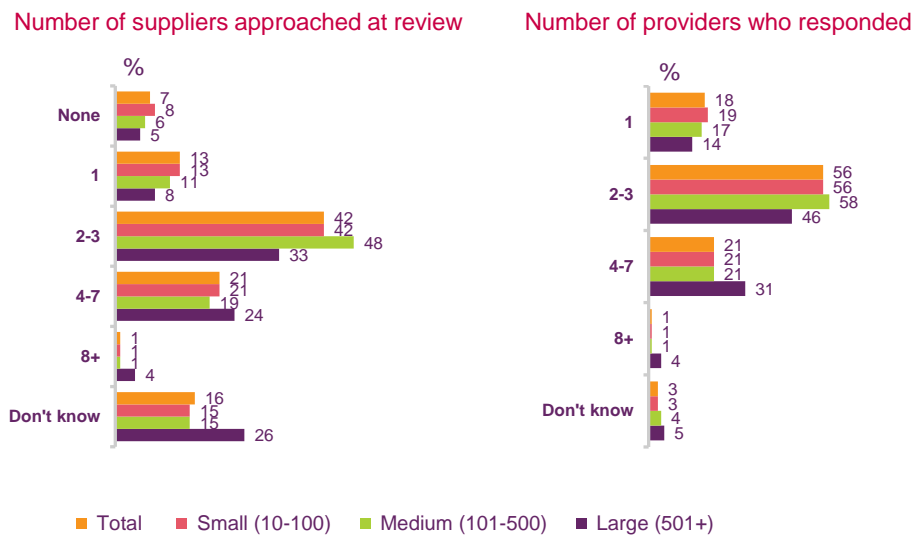
Base: *All who reviewed/changed supplier/service (Total n=582; Small n=180; Medium n=218; Large n=184) / All who approached at least one supplier (Total n=444; Small n=138; Medium n=176; Large n=130)*

Question: *QJ3 When you came to review your supplier or service approximately how many different suppliers did you approach? QJ4 And approximately how many different providers responded?*

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7.5.4 Suppliers considered

Respondents were asked which suppliers they considered at their last review and figure 7.13 shows that this closely mirrors the suppliers actually used for BCS, with BT considered by half (50%), followed by Virgin Media (15%) and TalkTalk (8%).

There are some differences by business size with large and medium businesses more likely than small businesses to have considered Virgin Media and large businesses more likely than small and medium businesses to have considered Vodafone.

Figure 7.13 Suppliers considered

*many others under 3%

■ Total   ■ Small (10-100)   ■ Medium (101-500)   ■ Large (501+)
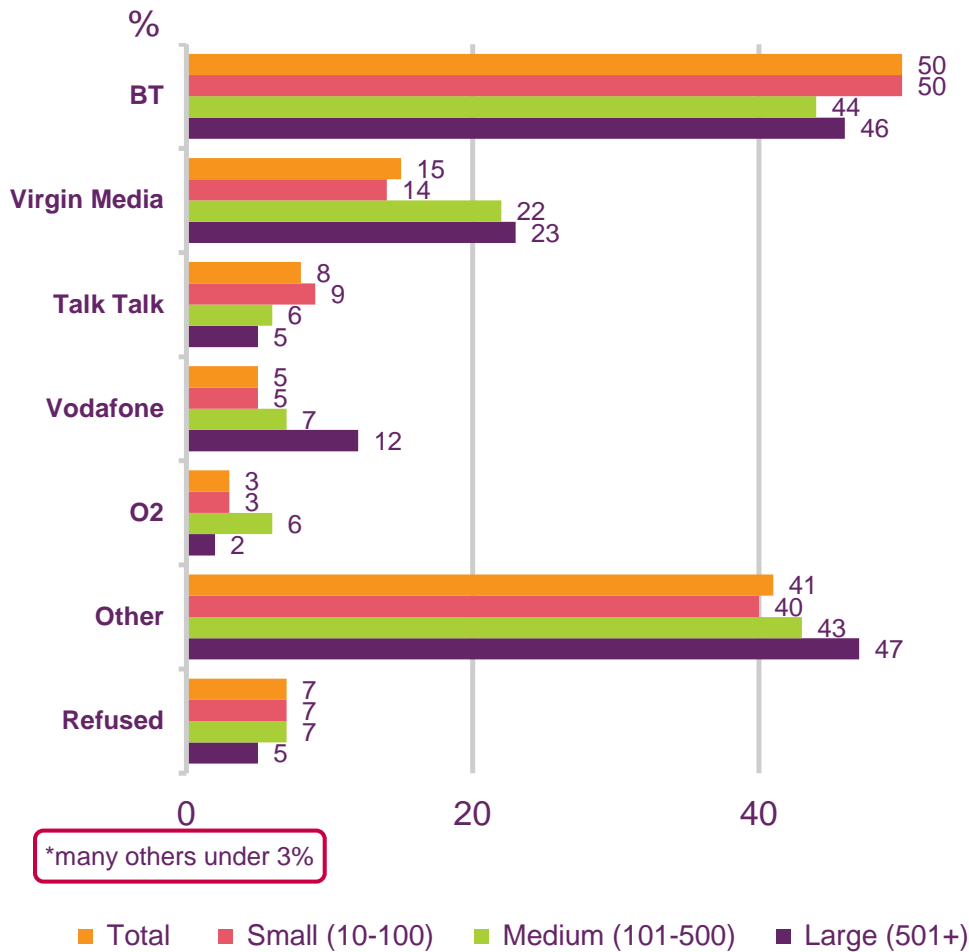
Base: All who approached at least one supplier (Total n=444; Small n=138; Medium n=176; Large n=130)

Question: QJ5 Who were the suppliers you considered?

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7.5.5 Factors compromising choice of supplier/service

Respondents that had considered whether to change their businesses supplier or service were asked whether they felt their choice was compromised in any way. Figure 7.14 shows choice of technology (18%) and limited suppliers with competitive prices (18%) are the main factors compromising choice.[20] However, it should be noted that half (50%) did not feel their choice was compromised in any way.

Figure 7.14 Factors compromising choice of supplier/service
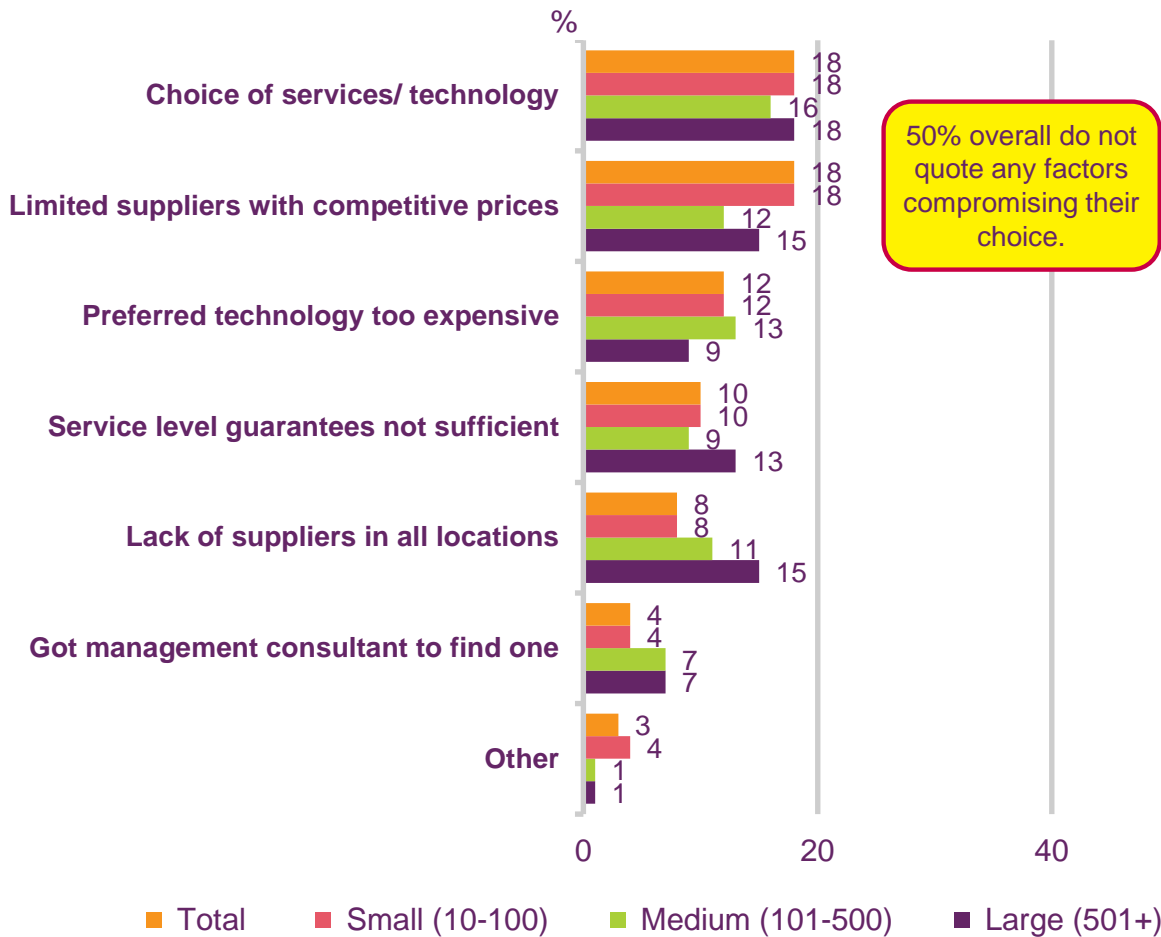
Base: All who reviewed whether to change supplier or service (Total n=582; Small n=180; Medium n=218; Large n=184)

Question: QJ6 Were there any factors that you felt compromised your choice of supplier/service?

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[20] An example of factors compromising a business's choice was discussed in case study interview 1, outlined in Appendix A

8. Switching

8.1 Summary

Several factors may affect a business's likelihood to switch supplier for BCS:

- **Contract length** – Around a third of businesses have existing contracts of 1 to 2 years (37%) and a similar proportion have contracts of 2 to 5 years (33%).
- **Bundling** – Nearly half (48%) of businesses say that their BCS are all purchased as single products.
- **Supplier management** – 69% of businesses use a single supplier for all BCS.
  - However, 80% say that having all their services with a single supplier is not a barrier to switching.

Most businesses are satisfied with the service from their main supplier regardless of business size and this appears to be reflected in the role that existing relationships play in barriers to switching.

Price and hassle are among the key barriers to switching (31% and 29% respectively); however, existing relationships also play a role (reflecting the fact that the majority are satisfied with their current main supplier) with a fifth citing good contacts at their existing supplier (20%) or that their current supplier understands their business (18%).

While most leased line users (82%) have not actively considered replacing these with standard or superfast[21] asymmetric broadband, 14% say they *have* actively considered it (6% intend to switch to asymmetric broadband at the end of their current contract while the rest (8%) have decided against it). Around a third of those that had not considered switching say they are likely to consider switching to it in the future; while 40% say they are likely to replace their current leased line service in the next three to five years; and nearly half of these will likely consider broadband (superfast or ADSL) and a quarter Ethernet.

Overall, 40% of leased line users say they are likely to replace their current leased lines in the next 3-5 years, suggesting that up to 18% with any leased line think that they would be likely to switch to broadband and up to 9% to Ethernet in future.

8.2 Factors potentially affecting switching

Contract length, **bundling** and **supplier management** are three areas potential switchers may need to consider before deciding to switch a service and/or a supplier of BCS.

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[21] Asymmetric fibre broadband services that offer headline speeds starting at 30Mbit/s or more and can be higher depending on location.

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8.2.1 Contracts

Figure 8.1 shows that around a third of businesses each have 1-2 year (37%) or 2-5 year (33%) contracts with an existing supplier for a BCS, while a quarter (24%) have contracts of up to 1 year.

Contracts more than 5 years in duration are rare – but still experienced by 7% of businesses.

Large businesses tend to have longer contracts with less than one in ten (9%) having a contract under a year in length, and nearly half (45%) having 2 -5 year contracts.

Figure 8.1 Typical length of BCS contract
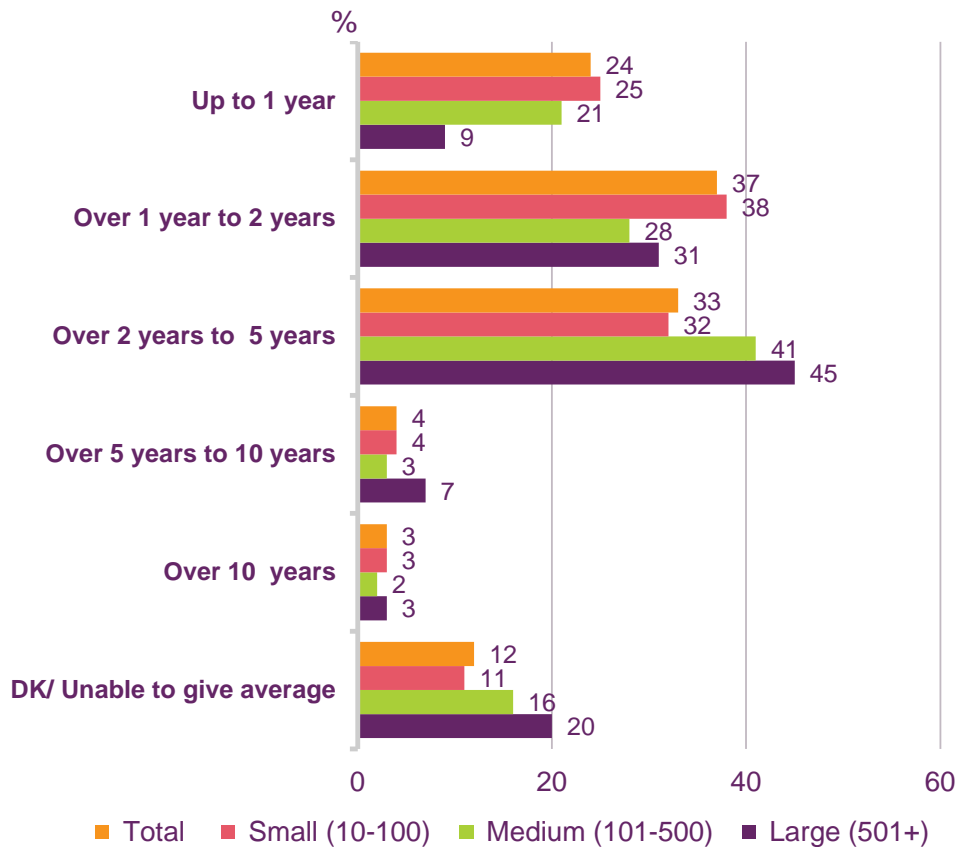
Base: *All respondents naming a BCS supplier (Total n=580; Small n=179; Medium n=217; Large n=184 (multiple coding as respondent was asked about each company used))*

Question: QG1 From start to end, how long is your current business connectivity service contract with [SUPPLIER]?

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8.2.2 Bundling

In addition to the presence of long term contracts, it is important to bear in mind that many businesses buy BCS as wider packages (or "bundles") rather than as discrete single products; so potentially complicating the prospect of switching to something else.

Figure 8.2 shows that businesses buy a mix of single products and wider packages. Nearly half of businesses (48%) purchase ALL BCS as single products. Those that do not may have to consider the impact on the other products which make up a bundled service of any potential switch of service or supplier, including any benefits (e.g. preferential pricing or service elements) as a result of taking packages rather than single products.

Small businesses were significantly more likely than large ones to purchase BCS as single products (49% compared to 31%).

Figure 8.2 Product vs. package
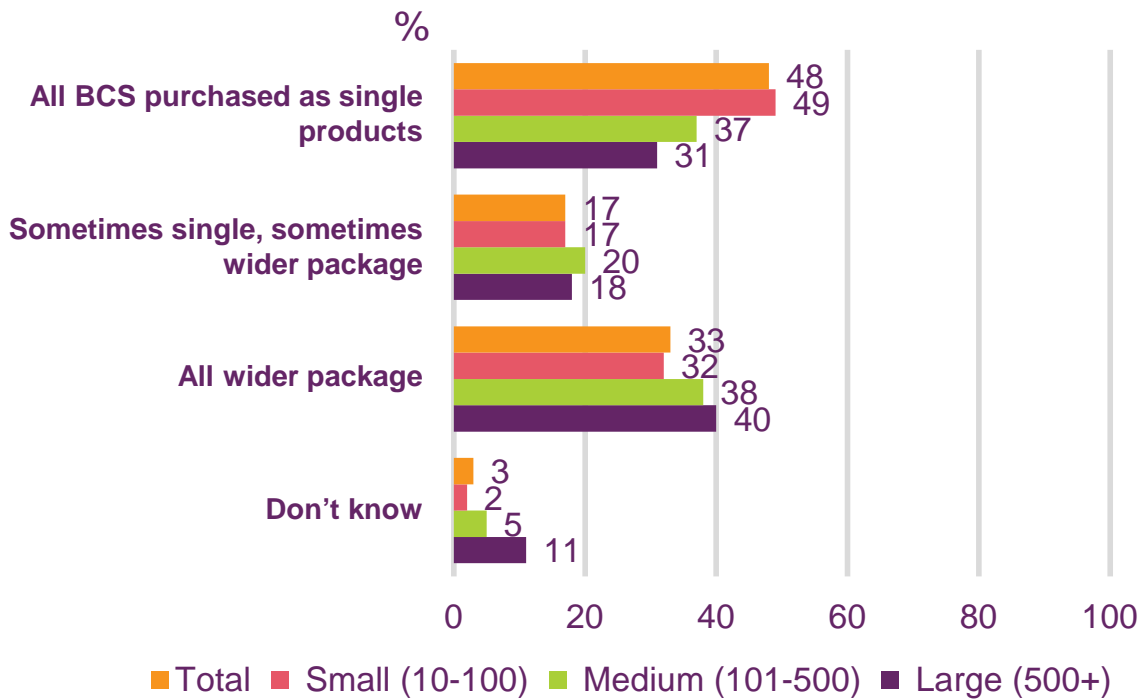
Base: All respondents (Total n=615; Small n=191; Medium n=229; Large n=195)

Question: QG3 Do you purchase business connectivity services as a single product or as part of a wider network solution or telecoms package?

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8.2.3 Supplier management issues

As we described in Section 5, **25%** of businesses use **more than one supplier** for BCS and **69%** use **a single supplier** (6% were not able to say).

Respondents were asked to give their reasons for using either a single (Figure 8.3) or multiple suppliers (Figure 8.4), and their response reveals more about potential barriers and challenges to switching services.

As shown in Figure 8.3, around two in five (42%) of those using a **single supplier** say that it is "easier to manage" one supplier than multiple while a quarter of businesses (25%) cite quality of service as a reason and just under one in five (17%) believe that having a sole supplier enables them to negotiate better discounts.

Businesses that use a **single supplier** only were asked whether having all their services with that one supplier is a barrier to switching and for the large majority (80%) this is not the case.

As shown in Figure 8.4, cost plays a large factor for those using **multiple suppliers** with one-third (32%) saying they get cheaper or better deals via this route. However, it is also a means of using the best or most suitable service for their business. Over a quarter noted it offered the most advance/fastest service at the time (29%) and that different suppliers are better able to provide different services required (27%).

For one in ten, using **multiple suppliers** offers a safety cushion of sorts (i.e. resilience). If one supplier lets the business down, the others can step into the breach and avoid a disruption to their connectivity that might occur following the failure of a single supplier's services.

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Figure 8.3 Reasons for using a single supplier

%

Reason	%
Easier to manage one supplier	42
Quality of service	25
Provide good/reliable service	19
Negotiate better discounts/ best price	17
Good relationships with them	16
Historic (always dealt with them)	15
Offer more advanced/ faster line speeds	11
They understand our business	10
Provide other telecoms services to us	8
Get a better service as a bundle	8
Easier to handle faults	5
Security issues	5
Bespoke security requirements	3
Only supplier available/ in location	1

Base: All who rely on one single-supplier (n=196*) *CAUTION LOW BASE

Question: QG7 Why does your company use only one supplier for your business connectivity services?

Figure 8.4 Reasons for using more than one supplier

%

Reason	%
Cheaper/better deals	32
Best/advanced service at time	29
Diff. Suppliers offer diff. services	27
In case one let down	10
No reason. just happened	9
More choice in diff. areas/regions	9
One can't meet all requirements	8
Negotiations more competitive	7
Best price available at time	6
Areas/ regions have diff. providers	4
Regions/off. make indep. decisions	3
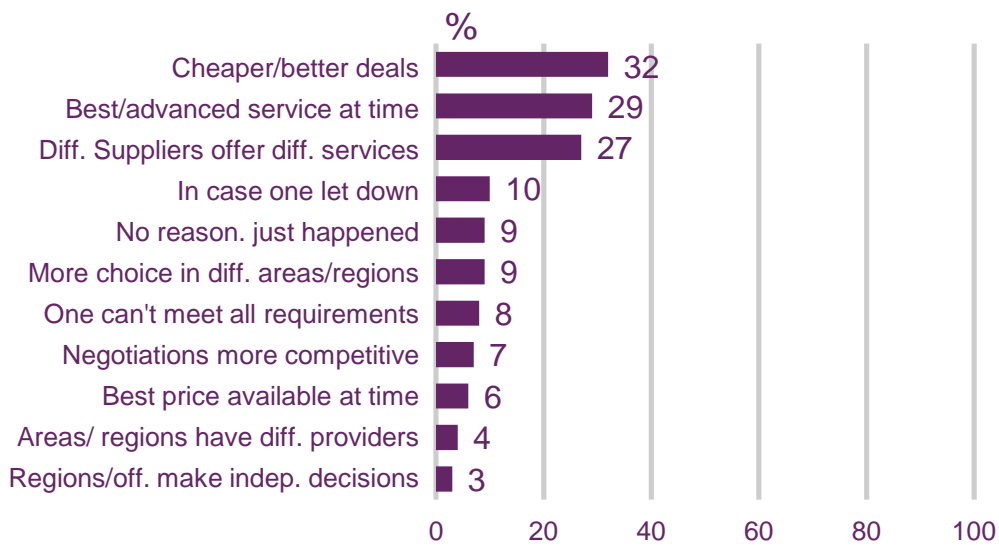
Base: All who use more than one supplier (n=103*) *CAUTION LOW BASE

Question: QG6a Why does your company use more than one supplier for your business connectivity services?

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8.3 Satisfaction with service from main BCS supplier

Respondents were asked how satisfied they are with the service they receive from their **main** BCS supplier and figure 8.5 shows that overall, satisfaction is high with most (87%) claiming to be satisfied. Across all business sizes, there was little variation in this high level of satisfaction.

Figure 8.5 Satisfaction with service from main supplier
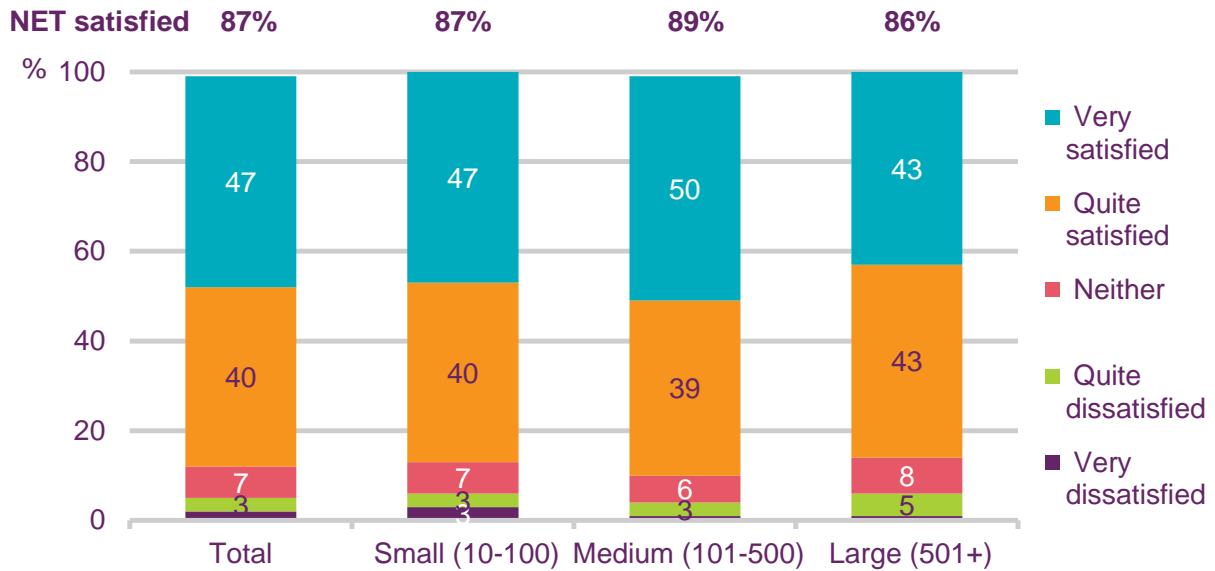
Base: All respondents with BCS (Total n=615; Small n=191; Medium n=229; Large n=195)

Question: QJ7 Overall, how satisfied are you with the current service you receive from your main supplier?

8.4 Key barriers to switching

Regardless of their actual switching intentions, respondents were given a list of potential obstructions and asked whether any of them represented main barriers to switching any of their data and/or voice services.

Figure 8.6 shows that price of services and hassle are the main barriers to switching (mentioned by 31% and 29% respectively). However, existing relationships also play a role (reflecting the fact that the majority are satisfied with their current main supplier as seen in the previous section) with a fifth citing good contacts at their existing supplier (20%) or that their current supplier understands their business (19%) is a barrier to switching.

Barriers to switching are similar across business sizes, although having good contacts at their existing supplier is more of a factor for small businesses than large ones (21% vs. 8%).

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Figure 8.6 Barriers to switching data/voice service
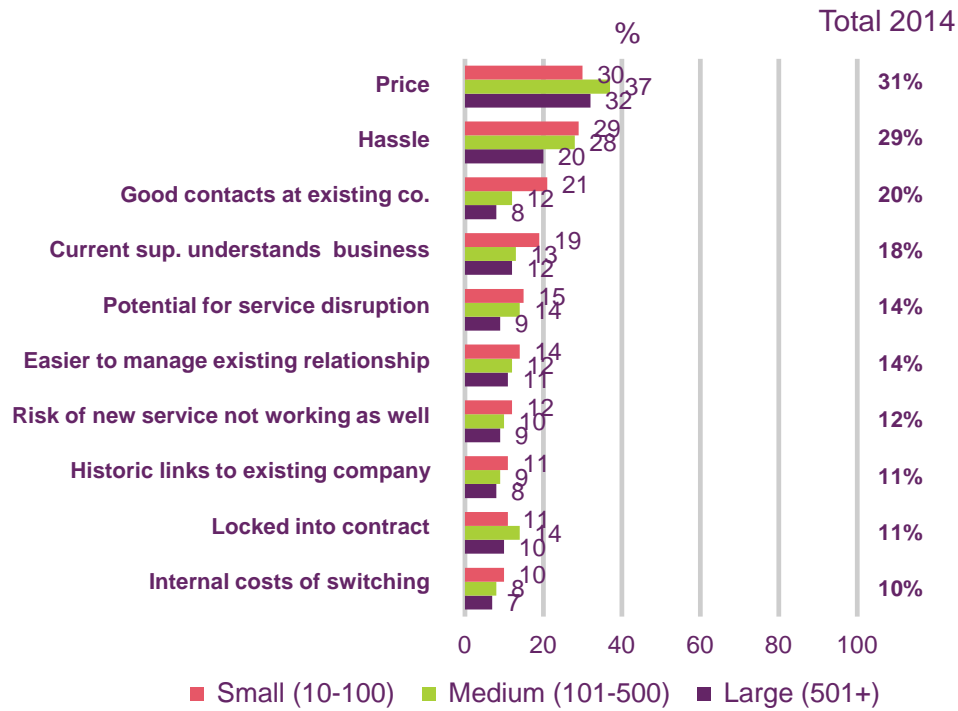
%   Total 2014

Barrier	Small (10-100)	Medium (101-500)	Large (501+)	Total 2014
Price	30	37	32	31%
Hassle	29	28	20	29%
Good contacts at existing co.	21	12	8	20%
Current sup. understands business	19	13	12	18%
Potential for service disruption	15	14	9	14%
Easier to manage existing relationship	14	12	11	14%
Risk of new service not working as well	12	10	9	12%
Historic links to existing company	11	9	8	11%
Locked into contract	11	14	10	11%
Internal costs of switching	10	8	7	10%

■ Small (10-100)   ■ Medium (101-500)   ■ Large (501+)

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8.5 Replacing analogue or SDH/PDH digital leased lines with Ethernet leased lines

8.5.1 Current/future consideration

Respondents with analogue or SDH or PDH digital leased lines were asked whether they had actively considered replacing them with Ethernet leased lines and those who had not were asked how likely they would be to consider doing so in the future.

Figure 8.7 shows that a quarter (24%) of analogue or digital (SDH/PDH) leased line users have actively considered switching to Ethernet leased lines and around half of these (13%) intend to do so at the end of their current contract while the rest (11%) have decided against it.

Around a third of those that had not considered switching say they are likely to in the future (35%).

Figure 8.7 Replacing analogue or SDH/PDH digital leased lines with Ethernet leased lines

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8.5.2 Challenges/concerns about replacing analogue or SDH/PDH digital leased lines with Ethernet leased lines

Respondents with analogue or SDH/PDH digital leased lines were asked to consider what challenges or concerns they might have about replacing their analogue or SDH/PDH leased lines with Ethernet lines.

Figure 8.8 shows that most (79%) of those with analogue or SDH/PDH leased lines have no concerns about replacing them with Ethernet. The top two concerns mentioned are inadequate service level agreements (7%) and concerns around reliability (6%).

Figure 8.8 Challenges or concerns about replacing analogue/SDH/PDH with Ethernet
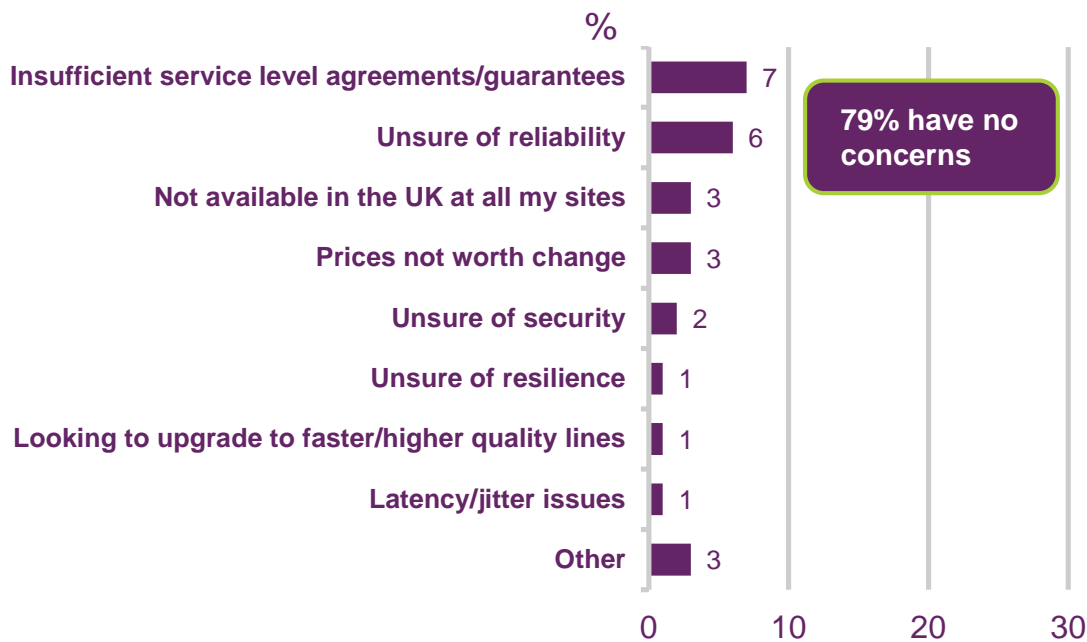
Base:　　All who use analogue and/or SDH/PDH digital leased lines (n=184*) *CAUTION SMALL BASE*

Question: QJ14 Do you see any particular challenges or concerns about switching your business connectivity services from SDH or PDH digital leased Lines/Analogue leased lines to Ethernet leased lines?

8.6 Replacing leased lines with standard or superfast asymmetric broadband services

8.6.1 Current/future consideration

Respondents with leased lines were asked whether they had actively considered replacing them with standard or superfast asymmetric broadband services and those who had not were asked how likely they would be to consider doing so in the future.

Figure 8.9 shows that most leased line users (82%) have not actively considered switching to asymmetric broadband. Fourteen per cent say they have actively considered it (6% intend to switch to asymmetric broadband at the end of their current contract while the rest (8%) have decided against it).

Figure 8.9 Replacing leased lines with standard or superfast asymmetric broadband – now
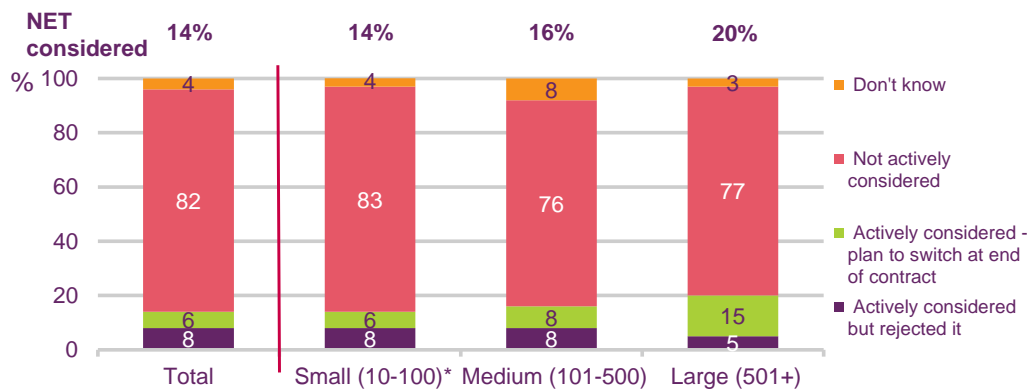
Base: All who use leased lines (Total n=403; Small n=100*; Medium n=158; Large n=145) *CAUTION SMALL BASE

Question: QJ9 You may be aware of standard or superfast asymmetric fibre broadband services. The latter offers headline speeds starting at 38Mbit/s and can be higher depending on location. Have you ever actively considered this as an alternative to your current leased line services?

Figure 8.10 shows that around a third of those that had not considered switching say they are likely to consider switching to it in the future (31%).

Figure 8.10 Replacing leased lines with standard or superfast asymmetric broadband – in the future
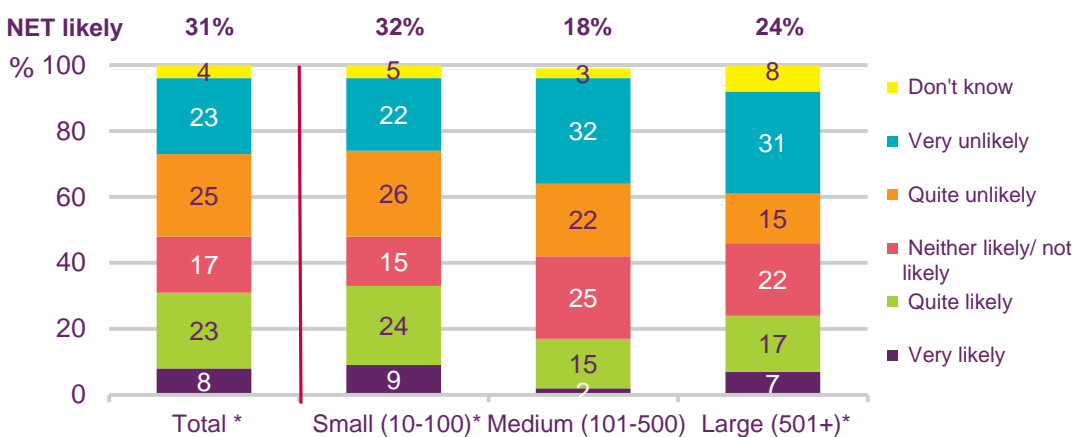
Base: All who use leased lines and haven't actively considered asymmetric fibre broadband services as an alternative (Total n=315*; Small n=80*; Medium n=126; Large n=109*) *CAUTION SMALL BASE

Question: QJ10 How likely would you be to consider switching to asymmetric broadband in the future?

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8.6.2 Challenges/concerns about replacing leased lines with standard or superfast asymmetric broadband services

Respondents with leased lines were asked what challenges or concerns they might have about replacing their leased lines with standard or superfast asymmetric broadband services.

Figure 8.11 shows that 42% of those with leased lines have no concerns about replacing them with standard or superfast asymmetric broadband. The main barriers for those that do have concerns are around bandwidth/speed upload requirements (17%) and reliability (15%).

Figure 8.11 Challenges or concerns about replacing leased lines with standard or superfast asymmetric broadband
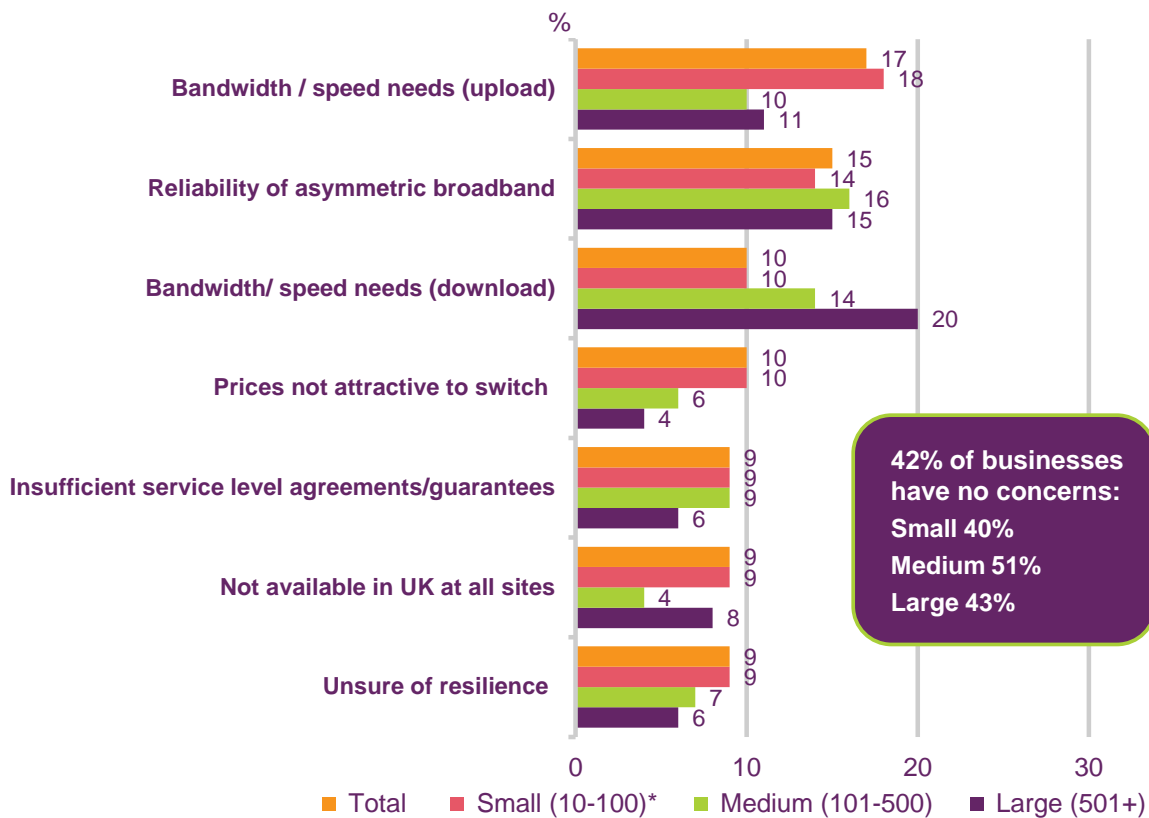
8.7   Replacing leased lines with other services

8.7.1   Likelihood to do so within 3-5 years

Respondents with leased lines were asked to think more broadly about switching their current leased line services and their likelihood to replace them with a different service (including other leased lines services).

Figure 8.12 shows that 40% of leased line users believe they are likely to replace their current leased lines with another service in the next 3-5 years.

Figure 8.12 Likelihood to replace leased lines with other service in the next 3-5 years
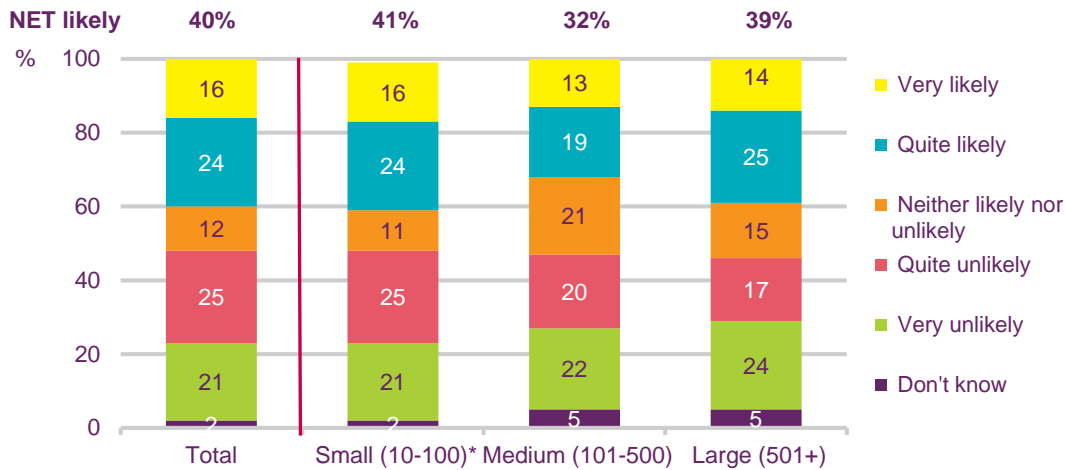
Base: All who use leased lines (Total n=403; Small n=100*; Medium n=158; Large n=145) *CAUTION SMALL BASE

Question: QK1 Over the next 3-5 years, how likely is your company to replace your current leased lines with a different service?

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8.7.2   Reasons for planning to replace current leased lines

Leased line users likely to replace their current service within the next 3-5 years were asked the reasons they plan to make a switch.

Figure 8.13 shows that for those that intend to replace their current leased lines, the main drivers to change are speed (61%) and cost (40%); and this mirrored reasons for switching service/technology seen in section 7.4 among those that had done so previously.

Figure 8.13 Reasons for planning to replace current leased lines
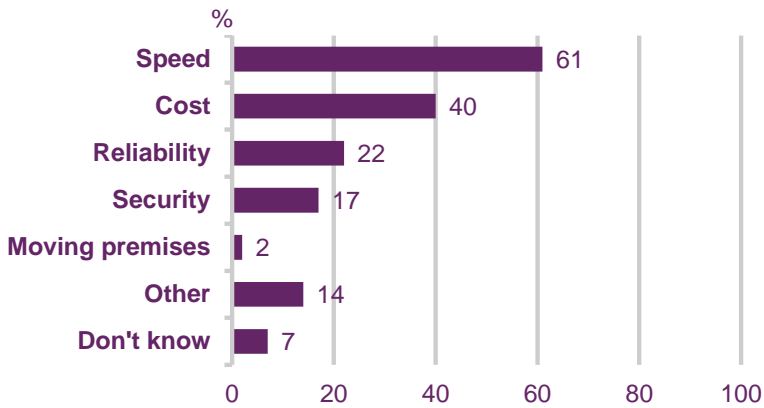
Base: All who use leased lines and likely to change their service/technology (Total n=143) *CAUTION LOW BASE*

Question: QK1a Why do you plan to change your service/technology?

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8.7.3 Specific services likely to replace current leased lines with

Those intending to switch from their current leased line services were then asked how likely they would be to replace them with some specific services.

Figure 8.14 shows that nearly half (46%) say they would replace their current leased lines with superfast or ADSL broadband. A quarter (24%) would switch to Ethernet, while one in twenty would use wave division multiplexed services (4%).

Overall 40% of leased line users say they are likely to replace their current leased lines in the next 3-5 years, suggesting that up to 18% with any leased line think that they would be likely to switch to broadband and up to 9% to Ethernet in future.

Figure 8.14 Claimed likelihood to replace leased lines with each service
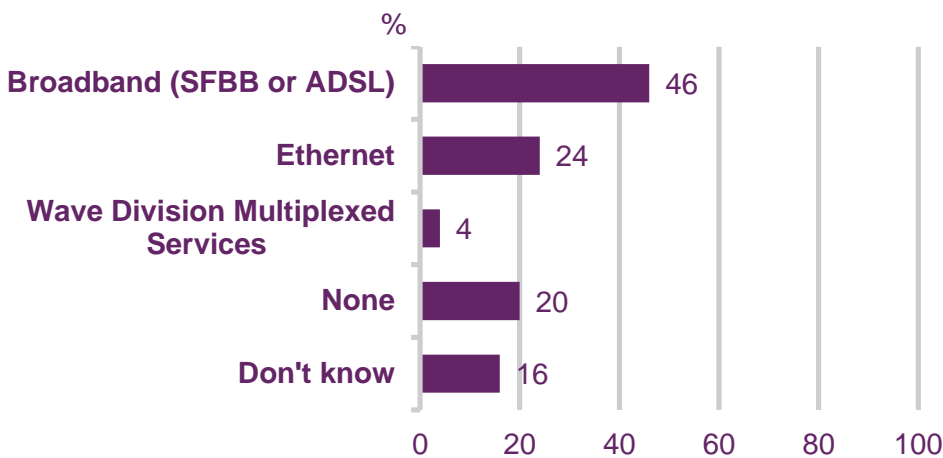
Base: All who use leased lines and likely to change their service/technology (Total n=143*) *CAUTION LOW BASE

Question: QK2 And is your company likely to replace leased lines with any of the following services?

Appendices

A. Case study interviews

a. Case Study 1:

Company background

The interview was carried out with the IT manager of a private healthcare organisation and registered charity with head offices in the North East of England and around 1200 employees across 60 sites in the UK. Although largely separate entities, the business does coordinate some business connectivity services decisions with a sister company in Ireland.

The business divides the country into three regions with a main regional office in each, linked together by a private MPLS connection.

Business Connectivity Services used

For voice, the three main regional offices use ISDN 30 channels and have dedicated telephone exchange switchboards on each site. Some of the smaller offices have smaller versions of these exchanges and use ISDN 2E connectivity. The rest of the sites use BT Featurelines or standard PSTN lines. They are looking into changing telephony systems, but this is at least a year down the line as they just signed new contracts. While they do not currently make use of VoIP, this is part of what they are considering for the future.

All sites are linked via a private MPLS connection, fully managed by Vodafone ECS who use a mixture of DSL for smaller sites (supplied by TalkTalk) and fibre for larger sites (supplied by Virgin Media).

All their internet lines are purchased separately from the main Vodafone-managed MPLS connection and are managed internally. These are supplied by a mixture of Virgin Media Business and Zen Internet (for ad hoc ADSL connections), with a separate connection through a reseller for the point-to-point line.

The business's two head office sites use fibre connections for broadband – a 4 Mbit/s Managed Internet Access (MIA) line at their main site and 2 ADSL lines at their backup site (for connectivity to the internet). They have one 100 Mbit/s point-to-point Ethernet line linking the two large data centre farms at their main and backup sites, which is a standard connection without much resilience in it. They have a 5 year maximum contract for this point-to-point line which is now approaching its last year.

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How Business Connectivity Services are used

The business currently uses business connectivity services for internet connectivity, email traffic, loading internet between their two main sites (they use a 4 Mbit/s line at Darlington and 2 ADSL lines at the other site) and for remote access (Remote Desktop Terminal Services (TS) for remote users and remote email access for web access).

Their current bandwidth is 4 Mbit/s both ways, uncontended at their main site (through fibre) and two DSL lines running at 14 Mbit/s down and 1 Mbit/s up at their Disaster Recovery (DR) site.

They used to have SDSL connected at the DR site, however, BT phased them out and forced them to go to the DSL route and get bonded DSL set up (he does not think this is the best solution but it is acceptable for now). They had quotes for EFM but it was not cost effective. As it is only a DR site, they do not run connectivity from there – remote access to the DR site is only used "*once in a blue moon*".

Their MPLS connection is run over 10 Mbit/s fibre between their main sites, while three smaller offices have 5 Mbit/s over fibre, and the rest have DSL connections up to 14-15 Mbit/s or down to 3-4 Mbit/s). It is dependent on connectivity in the area, not limited by the provider but by the location of the site and the distance to the exchange.

They use **Virgin Media** for Ethernet as they have a point of presence very close, so installation and rental costs are low compared to BT and other competitors who are both a little further away.

They are thinking of re-locating sites, so their needs are changing – they will need more remote access and more flexibility. At the moment they are still quite office-based with fixed computers, landlines etc.

> *"We're still quite old-fashioned in the way we work here (fixed landlines, fixed computers), but we do need to change the way we work. So we're basically changing the way that we operate and we are looking at a much more flexible way of working – we're introducing video conferencing, we're looking at a mobile workforce, and possibly into BYOD (bring your own device) as well – integrating your own devices into the corporate environment when needed."*

Therefore they will need **higher bandwidth**, which they currently struggle with for the two main infrastructure offices due to their location – they are in a black spot with regard to connectivity. Their main site is on the edge of Darlington, in between two telephone exchanges, and DSL is

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the only option. At their main infrastructure site, the BT Infinity connection date is unknown, so they are limited to using fibre connections (costly for what they get). This is the same at the DR site; BT won't upgrade it as there is not much demand. *"We are quite limited in the connectivity we can have at our sites and it's quite frustrating to be honest."*

Satisfaction with their current main supplier (Vodafone)

- **Service**: *"I can't fault that at all, they've been really good – it's a fully-managed service so if there are any faults they've been good at resolving them straight away. We have fully-managed equipment too at all sites; they're all connected by Cisco routers which are all managed by Vodafone themselves."* If there are problems on their DSL lines, they it report to Vodafone. *"They even sometimes tell us first, plus we have access to their portal so we can see what's going on ourselves. There's a bit of a grey area with the PSTN connections as we provided them ourselves so we might need to contact BT ourselves to fast-track it, but sometimes they do on our behalf if we need them to."*
- **Price**: They are generally satisfied with the price. The fibre connections are a little expensive in some of the offices, due to their location and distance from the exchange.
- **Length of contract**: the contract length is a little longer than they would prefer – 5 years for fibre – ideally they want 3 years for the main sites, 5 years has tied their hands a little. They have rolling yearly contracts for the DSL connections.

Priorities for connectivity

- **Resilience**: They want to put more things online and more users and need extra resilience in case they have problems. They do not have much resilience on external connectivity at the moment. The only resilience they currently have is between the two main sites, but none on the external connections (apart from the MPLS line into the main site. They have a DSL connection as well, so if there's an issue with the fibre, it will fall over to DSL and they are planning to do the same at the DR sites). There is no other resilience on external connectivity, but if one of the connections goes down it will fall over to the other site.
- **Speed/ bandwidth**: They will be using more data in both directions, which could be quite intensive so they are looking for symmetric connections at higher speeds/bandwidth.

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In terms of weaknesses in their current service provision, the main issue is the lack of resilience on the line. If it goes down, it takes manual intervention to switch it over. If there is future remote working or video conferencing, the two main offices would move into one site, so resilience will become more of an issue.

Provider choice

The provider for the MPLS connection was not his decision. The sister company in Ireland did the tender process for the MPLS connection and he follows their lead. They chose Interfusion, which was then bought out by Vodafone. *"They do the leg work and we follow; because we do have a plan to link our two wide area networks together and make a bonded network with them and have inter-sharing of some facilities."*

They have reviewed their fibre and DSL connections and are happy with the service from Zen and Virgin. They have had no problems, a good relationship and it is the cheapest for where they are. As they are looking to perhaps re-locate headquarters, they will then re-tender the lines they have at that point.

If they re-tender he would contact the large providers (BT, Virgin) and also discuss recommendations with other companies in the UK to find out about other suppliers. They usually include a minimum of three providers but in this instance they would push it to five.

> *"From my perspective I think the field is limited, so we'd get in touch with other contacts in the same industry and get their recommendations as I think the field is limited (majority of people use BT for main infrastructure) in regard to mainstream connectivity. We prefer to go direct rather than through a re-seller – as we don't want to have delay time with a middle-man. The main players are BT and Virgin as everyone else seems to just re-sell their services."*

Key criteria when choosing a provider

- **Price**: they are a registered charity so *"price is always the main driving factor"*
- **Resiliency**
- **Good Service Level Agreement (SLA)**: for uptimes and reliability of lines. They currently have an SLA on the main line (99.9% uptime and dedicated fix time of 4-6 hours) and the MPLS. They don't like re-sellers as it takes longer to get things fixed; they want to talk direct as it's quicker to sort things out and keep to SLAs

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- **Size of supplier**: *"It's moderately important – large organisations have the power to give those SLAs and have the power to back them up, but large organisations, for example BT, can get too big and we are treated like a small customer to them – you get the feeling we're not really that important to them. But in this instance we'd need a large organisation to give us the connectivity we require."* On the other hand, smaller suppliers tend to provide a good service, as to them, this organisation represents a large customer who they are keen to retain. Re-sellers delay things, and tend to have hidden charges involved.

Pricing

Their MPLS lines are charged quarterly, while their other lines, which were charged monthly, are now all charged annually.

His annual budget is £45k, but he doesn't pay for all the MPLS lines. These are re-charged to all the other offices. The total business spend is around £60-70k.

Switching

They are looking at upgrading to Ethernet and ADSL superfast broadband. The access between the sites (internet and external connectivity) is lacking at the minute. The 4 Mbit/s connectivity at the main site is struggling. The bandwidth requirement is both ways and as they are looking to do online training, video conferencing, upload speeds with remote workers can be strenuous on those lines.

They tried to consider **superfast**, but it is not available in the area they require it, *"we've been pushed to look down the fibre and Ethernet lines route because of the availability of connections."*

They considered **Ethernet** 9-10 months ago, however *"I couldn't warrant the extra price – the audit and risk team bounced it back."*

They also looked into another service with BT *"either fibre or copper, can't remember the name – it's more cost-effective but still too cost inefficient for what we need."*

Another option they looked into was EFM, however, the price was too much for the extra bandwidth.

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"What we have is good enough for what we need but it struggles. I could do with more bandwidth but it's not a 100% necessity as we can manage with what we've got."

The future depends on where the headquarters are re-located to, *"it might open the possibility of other services, e.g. superfast broadband might be enough for external connectivity, or could look at fibre again."*

If they move sites, there will be more remote working and so they will need more bandwidth. If they remain where, they are they will either upgrade their current fibre or make do with what they have. Bandwidth will be less of an issue if they do stay in their current location as there is not as much remote working expected and there is the possibility that they could use superfast broadband at the DR sites.

They have two sites in London, which would give them more options for suppliers and services, however, it's too far from the IT team. If they had superfast broadband down there, they would need server teams down there. They want the infrastructure to be where the IT support and main administrative teams are. They have looked into moving their servers to Halifax. *"They have really good connectivity, but it's just not logistically possible for us to support it as it's a good 90 minutes from the main office."*

If they had the option to use superfast broadband connectivity, their main consideration would be contention issues – they would need guaranteed bandwidth and it would depend on the package that they got. They *"expect bandwidth would be enough, and even if not they could get two connections and bond them and it would still be heck of a lot cheaper than Ethernet."*

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b. Case Study 2:

Company background

The interview was carried out with the IT director, the infrastructure operations manager and the network analyst of a transportation and logistics services company with 20 sites on their core network, six of which are in the UK.

Business Connectivity Services used

The business uses a combination of ADSL, SDSL, SDH, Ethernet, including EFM – "*whatever we can get quickly in the country.*"

In the UK, Ethernet is the preferred option and used across all of their main sites for all data and most voice (except two which are using SDH over copper where Ethernet is not available).

Their previous supplier was the Dutch firm KPN. They have moved across to a small reseller (EISON) that relies in the main on Vodafone inputs. The IT director's understanding is that the core network is from Vodafone and the reseller uses whoever it can get in each location for access tails. He does not have concerns with this approach as he sees this as one provider – "*we have 1 provider - Vodafone - it's their problem.*" The main reason for selecting this provider was due to cost.

The business uses DSL on small sites. Their smaller sites with 10-11 staff have no bandwidth requirement so this option is cheaper than Ethernet.

The main sites use Ethernet, comprising over 20 sites where they have an NGN/MPLS network. They use it for all data and most voice. There are some voice ISDNs / SIP solutions at some point (to allow VoIP, lower Ethernet connections).

They have DSL backup connections for resilience at most sites. In case the Ethernet is down they can replicate traffic to a disaster recovery site.

They use EFM over some sites, because it's cheaper and it's quicker to install than fibre.

Experience of Ethernet leased lines

Ethernet leased lines have met their expectations and they have not had many problems. While it has a long installation lead time, it is cheaper than what they had before. They need to be able to change bandwidth as and when (up to 100 Mbit/s) and they have 100 Mbit/s links on

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the new network and can burst up to the required amount. This means they can buy the capacity expected for the site (20-40 Mbit/s), but have the ability to increase bandwidth in the future. With Vodafone they can scale up the bandwidth, which is the first time it has been available like that. Vodafone made it a big selling point.

Pricing

They pay approximately £450 per month for the 100 Mbit/s Ethernet connections.

Provider choice

Cost is their main consideration, but they also like a **small** re-seller as they offer better **service**.

They have to go out to tender each time the contract runs out. In the past they have used BT or other larger suppliers, but now they spend less money and get a better service from a smaller re-seller (EISON).

KPN had been the cheapest, but they didn't offer a great service. The UK team was made redundant during the tender process and the IT director was not satisfied that KPN would be able to match up to its claims about delivery of the service required.

EISON were not originally the cheapest (although they became the cheapest on the fourth round of bidding) however, the user liked the **service** they offered: named contacts, project meetings and monthly meetings between technical people. They spoke to other big customers of EISON and they seemed happy, so it reassured them.

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Background to Company / role

The interview was carried out with the senior infrastructure engineer of a food distributor (supplying to wholesalers, schools and other organisations) with around 250-300 staff across eight sites, comprising three larger sites, with the remaining being smaller site with three to five users. IT supports the entire group both in the UK and internationally (Europe and Middle East).

Business Connectivity Services used

The business uses a combination of ADSL, ADSL2+ and EFM.

They do not currently use internal VoIP, but they plan to look into this for the future as it keeps costs down. *"Every site has a dedicated BT line in, we don't have an internal VoIP system, this is something we're looking to work on definitely…definitely for costs, and we need to upgrade where we have a very very old 90s phone system."*

All sites remotely connect to Petersfield (their central core ICT) to do their work via RDC (remote desktop connection)/RDP (remote desktop protocol). The network is centralised for printing and sharing files so they don't need to email files etc. All internet traffic comes into or out of Petersfield via a Dedicated Internet Access (DIA) Ethernet leased line link. *"Mainly for the ERP system, the whole business functionality is kind of centralised, mainly for the remote. What we hope to achieve for the site connectivity is low latency which we have been struggling to achieve."* Petersfield has Cloud for backup.

In terms of suppliers *"MDNX provide our MPLS, they then bring in different people whoever they use BT, Virgin Media…I'm pretty sure this is BT…but I deal with MDNX, or Easynet as they're known now."* They have no other services from Easynet apart from BCS, e.g. ICT is completely in-house.

How Business Connectivity Services are used

The main requirement for business connectivity is low latency as all employees work through RDC virtualised desktop. RDC requires at least a 100 ms ping rate for it to function and they cannot have a delay. *"We need it to be as if they are there in Petersfield, and to achieve that we need to guarantee low latency to get a good response. It needs to be quite robust."*

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Bandwidth is not a huge consideration as they only use data, around 5 Mbit/s (max 10 Mbit/s with current services). *"RDC uses very little bandwidth…All sites come in and go through Petersfield via the DIA (only 10* Mbit/s*) – entire company is using 10* Mbit/s *internet access which is quite poor. We're not too concerned about it at the moment as we're not utilising VoIP."*

Experience of Ethernet First Mile

Before using EFM, they had ADSL lines site to site and *"it was a bit of a mess".* They had a head office data centre and VPN between sites (via ADSL). EFM was sold as a VPN MPLS solution to connect sites (rather than ADSL). *"We've got ADSL tails but it's essentially a virtual private network…it's a VPN MPLS solution."*

Apart from the DIA Ethernet link into Petersfield, they do not use leased lines. *"We can't justify it for the nature of the business, as much as I really would like it."*

Three sites are using EFM as they didn't have very many options. They have good latency with EFM (the latency of ADSL was not sufficient). It also provides reliability, although there have been some issues with their Spalding site (see below). *"It's a stable line, it's reliable, it just works…and latency is good as well."* It's cost-effective when compared to a leased line. *"EFM was the next solution which was not costly compared to leased lines. Copper lines you still have the same issues with latency. They were after high response, low latency. I believe that's why they went for EFM. It works fine and it's probably still the best pricing-wise in comparison to leased-lines."*

The decision to install EFM was taken prior to him working there. He would not have chosen EFM (they do not need high bandwidth/ symmetric). He feels he could have got the latency they wanted using aggregated ADSL. *"If I had been there I wouldn't have recommended EFM as you can get the same results from aggregating 2 ADSL lines as you would without paying too much. EFM gives us high bandwidth but we don't really require this…we don't really need symmetric."*

Their other sites use ADSL. They are packing places with only have one to two users on site so ADSL is sufficient. They are also too far from the exchange for EFM. *"ADSL was all they could provide."* The cost of EFM for the department is too expensive for what they need.

They are having issues with EFM in Spalding. *"Spalding we're having a horrible time with EFM, but Cardiff and Cannock haven't had any major issues at all".* Spalding has had many issues

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with EFM being intermittent, dropping out 2 pings of every 7-8 successful pings, and having high latency (can take over 300-400 ms response time). The connection fluctuates.

MDNX sent BT to look into it and they tested the line. There were no issues in the building and they found no issues, but it is intermittent. This is common for a copper line, but it is uncommon for it to happen so frequently. *"They don't give us the full info on why it is as they don't want to give us anything to use against them. It's got to a point where going home and using ADSL lines is faster than staying at work and using EFM."*

Therefore due to the EFM issues they have been looking into aggregated ADSL lines *"in the hope that when one line is having issues the other will kick in, and in that way to get a more stable line."* Others kick in if one doesn't work (e.g. load balancing) which would provide an interim solution until the review at the end of 2015.

He is unsure if aggregated ADSL lines can provide the latency they require, but they have been looking at options and Easynet couldn't help them, so they have discussed with FluidData, which offers an aggregated ADSL line. *"They seemed to think this would solve the problem but I'm not an expert on that line so I'm just looking into it now. They can't guarantee the latency but that would give us less issues than we've been facing."*

Current service from Easynet

They have a three-year fixed contract with Easynet and overall, the business gets a good service with the current solution, apart from the EFM issues in Spalding.

Easynet are acceptable when it comes to issues. They have a four hour repair time generally, but this varies from site to site (the head office in Coulsdon and the Petersfield site have an urgent repair time – *"I can't remember what, but it is urgent"*). For the other sites repair time is not much of an issue as they can work from home.

Easynet recently re-structured and changed their account manager and they have not received a great service since then. *"Easynet restructured when they were bought out, the change meant we didn't get the same level of service we were getting before."*

They are tied into a contract starting when the last site was added. "*The way they drafted their contract meant we were tied in and they weren't flexible with the way they were dealing with us.*"

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They have had an issue with the old equipment used by Easynet in their core infrastructure in London, a ZyXel router (from a Chinese company), which is open to vulnerabilities and has caused them some problems.

In one site (Hathersage) where they have ADSL, there are too many users on the exchange and a very bad connection. *"We will then have very bad connections. It's not a problem for browsing the internet, but because of the nature of RDC, it requires low latency so even though they can browse the internet fine they won't be able to do their work, hence again why latency is a huge consideration…We don't really have too many options here."*

They have considered EFM, but it's too far away from the exchange. Leased lines are too expensive. *"It's definitely not an option."* Fibre broadband is coming soon through BT to that area, *"hopefully they won't just get everybody across to that and still have too many users and the same problems! The problem has been pointed out to them."*

Pricing

The business has a centralised pricing system for the whole group (and each site pays into that depending on how much each site generates).

"It's about the £9000 mark" for the whole solution with Easynet which includes the three EFM lines, DIA Ethernet link, ADSL etc.

Once they implement fibre broadband in their sites and the dedicated link in Petersfield with redundancy, he assumes they will pay up to £12k, to guarantee backups. *"We're looking to roll out certain services, e.g. Broadband, to save money so that cost could be used towards having a bigger pipe so we could use Cloud for overnight backup and so on…and would think they'd be willing to spend a bit more than we're paying currently in order to get a certain level of service and guarantee backup and so on."*

Future needs / requirements

The business will review at the end of 2015 and will explore all the options then. *"We'll be re-visiting everything – what we can get, what he market has to offer etc."*

Latency is the main concern for the future. They are potentially looking to run VoIP internally at which point they will need more bandwidth.

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"Latency. That's our main concern. And then in the future going towards VoIP. We need a decent line. Bandwidth would then change, which is why we're reconsidering anything. We're then looking at fibre and hope by that point we'll have fibre coverage in most of our offices."

They will look into having **fibre coverage** for all offices in the future. This would be fibre broadband, not leased lines, as this will deliver the latency needed. They do not have very high bandwidth requirements. *"That will give us very low latency, but bandwidth (high download/ upload speeds) is not a big concern for those sites. Here in Petersfield it will be, as we're going towards a Cloud solution for our backup."*

Their technical requirements for the future include:

- Low latency *"from my point of view latency is the most important"*
- Resilience in Petersfield
    - o At the moment they have one point of failure, no redundancy and one router. They would like another line for redundancy (either internal MPLS in the office or that can be accessed via the internet). *"For some sites we will need resilience. We're looking for another line for redundancy here [Petersfield]. At the moment we have one point of failure, if the internet line or Cisco router fails then we are pretty much out. We have some level of redundancy but it's not really true. We have a balanced firewall for example, if one fails the other one kicks in, but at the core entry we have just one router so it defeats the whole objective of having two firewalls. We will be looking into another line for redundancy…at the moment if something fails, we still have connectivity. Outside people can either access via the internet or the internal MPLS solution. There's no point where we could have a complete failure, unless the server room catches fire. It's the dedicated access line where we want resilience – if that fails users who are abroad won't be able to come into our system but we still have site to site connectivity through the MPLS."*
- They do not expect to have high bandwidth needs
- Ideally they want uncontended fibre connections up to 10 Mbit/s, but he is unsure if uncontended broadband exists and will be looking into this.

A fibre solution will offer lower latency and be a lot cheaper than EFM, but as it's not a dedicated line it might get overloaded.

"From our perspective this would give us what we need from EFM. I would expect lower latency [than EFM]. We will face the same issues [as Hathersage ADSL] as it's not a

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dedicated line with exchange being loaded with many users and they may not be able to guarantee us the bandwidth…but I would expect fibre to be a hell of a lot cheaper."

Their current bandwidth is 5-10 Mbit/s. When they move to VoIP, fibre broadband will be able to cope (up to 40 Mbit/s) which he thinks will be enough when they use VoIP. If when they look into it properly they find it's not, they may need a leased line between their two main sites. *"It might be a bit of a mix and match when I look into it properly."*

EFM offers a dedicated line and reliability, but he thinks the broadband solution will be cheaper and sufficient for requirements.

Key criteria when choosing a provider

They have had no clear structure or processes for choosing a supplier previously. *"Ideally I'd like to revisit it every few years or year but we've been tied into a very dodgy contract which said that our last site to be upgraded was our contract for 3 years. It looks like we can't look into it until late 2015."*

Relationships with other suppliers are important, e.g. MDNX's relationship with BT. They make sure it's a strong relationship so they are not tied in without service.

The size of the supplier matters. A larger organisation gives confidence in their stability. *"We want to be confident in the stability of the business."*

They need Service Level Agreements (SLAs) that any issues will be quickly resolved.

Going forward they will require a data centre facility for redundancy. They want to replicate what they currently have at a data centre. *"We're looking to replicate what we have here at a data centre. Whoever we go with would need to have a data centre."*

They would look at cost vs. what the supplier can offer. The financial director makes the final decision based on a cost/benefit analysis.

The process would be to pick a few companies and discuss what they can offer. They will consider:

- FluidData (not Easynet) as it has been recommended, the customer service looks good and they use new equipment
- Vodafone is the "hot one". Currently they have mobile phone contracts with them so they could package all in one for the best price. They have also invested recently in

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infrastructure. *"Their core infrastructure on site-to-site is good. They've invested billions into it recently so we expect good service. Cost might have been an issue but considering we spend a lot on the mobile phones, we're expecting to get a decent package with them."*

- BT as they have more coverage
- Virgin Media will be considered, however, *"Virgin do not have coverage in some areas so we'd consider BT more than Virgin Media."*
- *"At the moment it doesn't look like Easynet."*

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B. 2014 Questionnaire

21323   Ofcom BCMR 2014 Questionnaire V6 – FINAL

BRIEFING NOTE TO INTERVIEWERS ON DESIRED RESPONDENT:
We are keen to speak to the person in the organisation who has decision-making responsibility in relation to 'Business Connectivity Services' or services which carry voice and/or data traffic between business sites to enable communication within an organisation.

In larger companies that have an IT function, we expect this person to be the most senior in that department, the IT Director or equivalent. In smaller companies where there is no dedicated IT function, we would expect to talk to the Owner or Managing Director in most instances.

We do not want to talk to the person that simply signs off budgets. We want to speak to the person who is either solely or jointly responsible for deciding which Business Connectivity Services and suppliers to choose on behalf of the organisation.

We do not want to talk to an administrator. The only exception to this might be where we are collecting usage data about spend and the senior decision-maker doesn't have this factual information to hand. We would be very happy to start the interview with the senior decision-maker and be referred to more junior personnel in order to collect this type of data.

In cases where there is a parent company and separate sub divisions/brands where autonomous decisions are made, we want to talk to the company making the majority of the decisions. Therefore if the parent company only sets the broad policy and individual sub brands are fairly autonomous in terms of implementation and decision making we want to treat each sub brand as a separate company/interview in the research. However, where the parent company largely dictates decision making, they should be treated as the 'major interview' and then the sub companies can be used to 'fill in gaps' in much the same way as we would do with individuals within any one company.

We are also contacting some government departments and other public sector organisations. When contacting departments it is important that they are not referred to as 'companies' but 'departments' and that it is made clear to the officials that we are conducting the research in order to fulfil our statutory duties and that any other public sector organisations are similarly not referred to as 'companies' but 'organisations'.

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AT RECEPTION:

Please could I speak to the person who has responsibility (sole or joint) for IT, telecoms and other communications services? If you have a dedicated IT Manager or Director please could we speak to them?

INTRODUCTION:

Hello my name is .... from BDRC Continental, calling on behalf Ofcom the independent regulator for the UK's communications industries.

Ofcom wishes to better understand how businesses are using 'Business Connectivity Services', in other words services which carry voice and/or data traffic between business sites to enable communication within an organisation. The research will help Ofcom identify areas where there is a need for further advice, information or support. May I ask you some questions? IF NECESSARY: The interview will take around 20 minutes.

BDRC Continental is a member of the Market Research Society and a bona fide and independent market research company. Any opinions you express during this interview will remain confidential and will not be attributed to you directly.

(Central Government Departments only) Ofcom is conducting this research as part of its statutory duties under the requirements laid out in the 2003 Communications Act.

Before I start the interview can I just check that you are one of the people in your company who makes decisions at a senior level about the telephone and IT services at your company?
IF YES, CONTINUE INTERVIEW. IF NO, ASK TO SPEAK TO SOMEONE WHO IS.

IF RESPONDENT QUERIES HOW CALL WAS MADE:
BDRC Continental does not use an 'automatic dialler' which can result in the line being silent when picked up. All calls are made by our trained interviewers.

IF RESPONDENT QUERIES CALL AS THEY ARE TPS REGISTERED, PLEASE READ OUT:
"I am calling on behalf of Ofcom the regulatory body for the communications industry, this is a market research call - not a marketing or sales call. We are keen to hear your views on an important issue in the communications sector and need to speak to as many people as possible, including those who have opted out of marketing calls via the Telephone Preference Scheme. Registering for the Telephone Preference Scheme means that you should receive fewer marketing and sales calls, but it does not apply to market research calls"

Should you wish to verify this information I can provide you with both the name and number of the executive in charge of this survey or alternatively you can ring 0500 39 69 99 and be put through to FREEPHONE MARKET RESEARCH SOCIETY who will also be able to confirm our status as a legitimate Market Research Agency.
IF RESPONDENT REQUIRES EXECUTIVE NAME AND NUMBER, THE EXECUTIVES FOR THIS SURVEY ARE JAMES MYRING AND JEREMIAH FRYER AND THE NUMBER TO CALL IS 020 7490 1000 (DURING NORMAL WORKING HOURS 9.00 AM - 5.00 PM ONLY)

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QS1a (QS1a)   ASK ALL
Thinking about your company's current telecoms provision for voice and data connectivity, which of the following types of telecoms services does your company have?
READ OUT. MULTICODE.

RESPONDENT MUST ANSWER ONE OF CODES 5-11 TO CONTINUE

PSTN (voice) 1
Dial-up (for data)..2
ISDN for voice and data 3
ADSL or Cable modem, or fibre broadband connection 4
EFM (Ethernet First Mile) 5
SDSL (Symmetric Digital Subscriber Line) – (broadband with equally fast upload/download speeds) for some/all voice and/or some/all data communications 6
Virtual Private Networks (VPNs), mainly underpinned by ADSL or cable modem, or fibre broadband connection 7
Leased lines for some/all voice and/or some/all data communications (ASK QS1b) 8
Virtual Private Networks (VPNs), mainly underpinned by leased lines (ASK QS1c) 9
Mobile or other wireless technologies (as a replacement for data over a fixed line)
IF NECESSARY: this is for data only, not mobile services used by employees for voice and excludes WiFi within the office. 10
Other business connectivity services (ASK QS1b) 11

QS1b (QS1b)   ASK ALL CODING 8 OR 11 AT QS1a. IF QS1a CODE 11 AND NONE OF CODES 5-10 AND QS1b ONLY CODE 10 OR 11, THEN CLOSE.
What types of leased lines or other business connectivity services do you have?
ONLY PROMPT IF NECESSARY. MULTICODE.

Analogue Leased Lines 1
SDH or PDH digital Leased Lines (SDH or PDH - time division multiplexed digital leased line) 2
Ethernet digital Leased Lines (Ethernet - packet multiplexed digital leased line) 3
Ethernet First Mile (EFM) 4
ATM (a switching technique for telecommunications networks) 5
Frame Relay (protocol standard for LAN networking) 6
Wave division multiplexed services (offers very high bandwidth connectivity) 7
Storage access networks (SAN) services, e.g. Fibre channel, FICON, ESCON (provides access to consolidated, block level storage) 8
Satellite links..9
Other (specify) 10
Don't know 11

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QS1c (QS1c)   ASK ALL CODING 9 AT QS1a
What types of leased lines or other business connectivity services do you have underpinning your VPN?
ONLY PROMPT IF NECESSARY. MULTICODE.

Analogue Leased Lines 1
SDH or PDH digital Leased Lines (SDH or PDH - time division multiplexed digital leased line) 2
Ethernet digital Leased Lines (Ethernet - packet multiplexed digital leased line) 3
Ethernet First Mile (EFM) 4
ATM (a switching technique for telecommunications networks) 5
Frame Relay (protocol standard for LAN networking) 6
Wave division multiplexed services (offers very high bandwidth connectivity) 7
Storage access networks (SAN) services, e.g. Fibre channel, FICON, ESCON
(provides access to consolidated, block level storage) 8
Satellite links...9
Other (specify) 10
Don't know 11

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Overall how well would you say you understand the descriptions of the various services in the previous questions on a scale of 1-10, where 10 is completely understand and 1 is did not understand at all?
ONLY PROMPT IF NECESSARY. MULTICODE.

1 – did not understand at all 1
2...2
3...3
4...4
5...5
6...6
7...7
8...8
9...9
10 – completely understand 10

QS2 (QS2)   ASK ALL
Approximately how many employees does your company/organisation have at all sites in the UK?
IF NECESSARY: Excluding any parent or holding company or other individual companies within the group.
SINGLE CODE

Less than 10 ....1 CLOSE
10-50...2
51-100...3
101-250...4
251-500...5
501-1000...6
1001+..7
Don't know ....8 CLOSE

QS3 (QS3)   ASK ALL
Are you responsible, either solely or jointly, for decision-making on business connectivity services at some or all of the sites your business has?
SINGLE CODE

Yes –solely or jointly responsible for some or all sites 1
.... CONTINUE
No ....2 CLOSE
Don't know ....3 CLOSE

QS4 (QS4)   ASK ALL
CODED AUTOMATICALLY FROM SAMPLE (TELECOMS TO BE EXCLUDED)
N.B. MINIMUM OF 10 TO BE CODE 8 AMONGST BUSINESS WITH 501+ EMPLOYEES.
OVERALL 'PUBLIC ADMIN & SERVICES' QUOTA TO BE BASED ON CODES 7 AND 8 COMBINED.

Primary industry..1
Manufacturing...2
Construction..3
Wholesale/Retail/Transport/Communications 4
Financial Services 5
Other services...6
Public admin and services (EXCLUDING CENTRAL GOVERNMENT ORGS)..................7
Public admin and services (CENTRAL GOVERNMENT ORGS ONLY) 8
Other...9

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QS5 (QS5)   ASK ALL
In which nation or region of the UK is the main UK office of your company located?

Scotland...1
Wales...2
Northern Ireland..3
London (inside M25)..4
South East 5
South West 6
East of England 7
East Midlands 8
West Midlands 9
North East..10
North West..11
Yorkshire and Humber...12

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FURTHER BUSINESS CLASSIFICATION AND BCS OUTLINE

I'd now like to ask you a few more background questions about your company before going on to talk more about your business connectivity services. This survey is about your enterprise network excluding public telephone services and/or ISDN and/or dial-up internet

QA1 (QA1)   ASK ALL
To the best of your knowledge what would you say is the annual turnover for your company?
SINGLE CODE. DO NOT INCLUDE OVERSEAS TURNOVER IF ASKED

Less than £150,000 1
£150,000 - £249,999 2
£250,000 - £499,999 3
£500,000 - £999,999 4
£1 Million - £2.5 Million 5
£2.5 Million - £20 Million 6
£21 Million - £50 Million 7
£51 Million-£100 Million 8
£101 Million - £500 Million 9
Over £500 Million..10
Refused 11
Don't know 12

QA2 (QA2)   ASK ALL
Approximately how much does your organisation spend annually on business connectivity services within the UK across all sites? Please exclude spending for the services mentioned in the introduction (i.e. excluding public telephone services and/or ISDN and/or dial-up Internet) and please base this on the whole organisation and not just parts that you may be responsible for.
SINGLE CODE. PROMPT WITH BANDS IF NECESSARY ESTIMATE OKAY IF NOT SURE

Less than £10k 1
£10k - £24k..2
£25k - £49k..3
£50k - £99k..4
£100k - £249k..5
£250k - £499k..6
£500k - £999k..7
£1m - £4.9 million 8
£5m - £9.9 million 9
Over £10 million..10
Don't know (DO NOT READ OUT) .... Y

QA2a   ASK ALL SAYING DK AT QA2
Would you be able to estimate approximately how much your organisation spends annually on all telecoms services within the UK across all sites? Please base this on the whole organisation and not just parts that you may be responsible for.
SINGLE CODE. PROMPT WITH BANDS IF NECESSARY ESTIMATE OKAY IF NOT SURE

Less than £10k 1
£10k - £24k..2
£25k - £49k..3
£50k - £99k..4
£100k - £249k..5
£250k - £499k..6
£500k - £999k..7
£1m - £4.9 million 8
£5m - £9.9 million 9
Over £10 million..10
Don't know (DO NOT READ OUT) .... Y

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QA3 (QA3)   ASK ALL

And how many individual sites, outlets, branches and or offices, including the one where you work does your company/organisation have in the UK?

IF NECESSARY: If you're not sure of the exact number, please provide your best estimate.

INTERVIEWER: EXCLUDE ANY PARENT HOLDING COMPANY OR OTHER INDIVIDUAL COMPANIES WITHIN THE GROUP. ALSO EXCLUDE TELE-WORKING E.G. FROM HOME RECORD EXACT NUMBER OF SITES. SCRIPTER: PLEASE CODE TO THE FOLLOWING BANDS

PLEASE ENTER NUMBER OF SITES_____

1..1
2..2
3-5...3
6-10...4
11-15...5
16-20...6
21-50...7
51-100...8
101-500...9
501+..10
Don't know – but more than one (DO NOT READ OUT) .... Y
Don't know (DO NOT READ OUT)... Y

QA4 (QA4)   ASK ALL

You have said that you use [LIST WHAT IS CODED FOR 6-7, 9 &11 AT QS1A PLUS CODES 1-3 & 7 FROM QS1B OR QS1C].

For each of these, can you specify whether you use them for the following business uses?
READ OUT LIST – MULTICODE FOR EACH TYPE OF CONNECTION
SCRIPTER – ONLY INCLUDE THOSE WITH FOLLOWING CODES AT QS1a/b

SHOW LIST OF BCS USED AT QS1a/b	SDSL for some/all voice and/or some/all data communications (Code 6 QS1a)	Virtual Private Networks, mainly underpinned by ADSL or cable modem access (Code 7 QS1a)	Virtual private networks, mainly underpinned by leased lines access links (Code 9 QS1a)	Analogue Leased lines for some/all voice and/or some/all data communications (Code 1 QS1b or c)	SDH/PDH Leased lines for some/all voice and/or some/all data communications (Code 2 QS1b or c)	Ethernet leased lines for some/all voice and/or some/all data communications (Code 3 QS1b or c)	Wave division multiplexed services (Code 7 QS 1b and c)	Other business Connectivity services for voice and/or data communications (Code 11 QS1a)

Voice - PSTN grade quality 1
Voice - VoIP/Voice over broadband 2
Data - E-mail & internet 3
Data - Shared enterprise application, information & knowledge 4
Data - Storage network..5
Data - Remote access to enterprise network 6
Data - Video...7
Resilience – as a back-up line..8
Others 9

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SUPPLIER/CIRCUIT DETAILS

QB1 (QB3)   ASK ALL
   Which Telecoms supplier or suppliers does your organisation use for your business connectivity
   services across all your sites?
   DO NOT PROMPT BUT PROBE FULLY TO CONSIDER ALL BUSINESS CONNECTIVITY
   SERVICES ACROSS THE COMPANY. MULTICODE

Accenture	MLL Telecom
Alcatel	MS3
Alternative Networks	Neos
AT&T	O2 / BE
BT	OBS / Orange Business Services
Cable and Wireless / C&W	Opal Communications/Pipex
CapGemini	Orange (INCLUDE IN NET WITH OBS IN TABLES)
Carphone Warehouse	Primus
Chess	Sky
City Fibre	Spitfire
Claranet	Surf Telecoms
Colt	Talk Talk
CSC	Telefonica (INCLUDE IN NET WITH O2 / BE IN TABLES)
Daisy	Timico
Demon	Tiscali
DST (Directsave.com)	Titan
Easynet	T-Mobile
Eclipse	Tooway
EDS	Updata
EU networks	Vaioni
Everything Everywhere/EE	Verizon
Excel	Virgin Media (NTL/ Telewest)
Exponential-e	Vodafone
Fibre Speed	Vtesse
Fujitsu	Welcome Telecom
Gamma	Zayo
Geo Networks	2E2
Global Crossing	"3"
IBM	Resourced internally

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Intechnology	Other (Specify)
Inter route	Other (2ND other mention ONLY)
Janet	Other (3RD other mention ONLY)
KCom (Kingston Communications)	(Don't know)
Level 3	

QB2a (QB6A)   ASK ALL

For each of the following services that you use, which of the following bandwidths do you have?

IF NECESSARY: By bandwidth we mean the capacity of the connection you have to individual sites.

READ OUT THE BANDWIDTH LIST () FOR THE SPECIFIC SERVICE BELOW (PART OF THOSE CODED AT QS1a-c). MULTICODE

QB2b (QB6A)   ASK ALL

And how many connections do you have to your business sites at each bandwidth?

ASK FOR EACH BANDWIDTH SELECTED AT QB2a, FOR EACH SERVICE APART FROM WAVE DIVISION MULTIPLEXED SERVICES (CODE 7 AT QS1B OR C).

FOR THOSE USING WAVE DIVISION MULTIPLEXED SERVICES (CODE 7 AT QS1B OR C) ASK
And what is the average number of lit wavelengths per site at each bandwidth?
IF DON'T KNOW Please could you estimate the total bandwidth across all sites?

PLEASE   ENTER   TOTAL   BANDWIDTH   ACROSS   ALL
SITES_____

Don't know (DO NOT READ OUT) .... Y

	Sub 2Mbit/s	2Mbit/s	Above 2Mbit/s to 10 Mbit/s	Above 10 Mbit/s up to and including 45 Mbit/s	Above 45Mbit/s up to and including 100 Mbit/s	Above 100 Mbit/s up to and including 155 Mbit/s	Above 155 Mbit/s up to and including 622 Mbit/s	Above 622 Mbit/s up to and including 1 Gbit/s	Above 1 Gbit/s up to and including 2.5 Gbit/s	Above 2.5 Gbit/s	Don't know
The access links underlying VPNs. If											

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unknown, the VPN bandwidth itself (codes 7 or 9 in QS1a)							

	Sub 2Mbit/s	2 Mbit/s up to and including 10 Mbit/s	Above 10 Mbit/s up to and including 20 Mbit/s	Above 20 Mbit/s up to and including 30 Mbit/s	Above 30 Mbit/s up to and including 40 Mbit/s	Above 40 Mbit/s	Don't know
ADSL or Cable Modem (code 4 in QS1a)							

	Sub 2Mbit/s	2 Mbit/s up to and including 10 Mbit/s	Above 10 Mbit/s up to and including 20 Mbit/s	Above 20 Mbit/s up to and including 30 Mbit/s	Above 30 Mbit/s up to and including 40 Mbit/s	Above 40 Mbit/s	Don't know
SDSL (code 6 in QS1a)							

	Sub 2Mbit/s	2 Mbit/s	Above 2 to 34 Mbit/s	35 to 154 Mbit/s	155 Mbit/s	Above 155 Mbit/s	Don't know
SDH/PDH digital leased lines (code 2 in QS1b or c)							

	Below 10 Mbit/s	10 Mbit/s	Above 10 Mbit/s up to and including	Above 100 Mbit/s up to and	Above 1 Gbit/s up to and including	Above 2.5 Gbit/s	Don't know

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			100 Mbit/s	including 1 Gbit/s	2.5 Gbit/s		
Ethernet leased lines (code 3 in QS1b or c)							

	Below 1 Gbit/s	1 Gbit/s	2.5 Gbit/s	10 Gbit/s	40 Gbit/s	100 Gbit/s	Don't know
Wave division multiplexed services (code 7 in QS1b or c)							

QB2c (QB6A)   ASK ALL USING WAVE DIVISION MULTIPLEXED SERVICES (CODE 7 AT QS1B OR C)
At how many sites do you have wave division multiplexed services equipment installed?

IF NECESSARY: If you're not sure of the exact number, please provide your best estimate.

PLEASE ENTER NUMBER OF SITES_____

Don't know – but more than one (DO NOT READ OUT) .... Y
Don't know (DO NOT READ OUT) .... Y

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QB3 (QB6B)   ASK ALL
Are some or all of your business connectivity services 'contended'? EXPLAIN IF REQUIRED: In other words, the bandwidth is shared amongst multiple users rather than being dedicated or reserved to a single user?
SINGLE CODE

Yes – all 1
Yes – some 2
No 3
Don't know 4

QB3a   ASK ALL SAYING YES (CODES 1-2) AT QB3
You mentioned that some or all of your business services are contended. Do you feel that the contention rate noticeably affects the service quality of any service characteristics?
READ OUT. MULTICODE.

Download speed 1
Upload speed...2
Latency / jitter 3
Any others (specify) 4
None 5

QB4 (QB7)   ASK ALL
We would like to know more details about the number of your business connectivity circuits/connections. Approximately how many circuits/connections do you have across all your business sites?
PLEASE TYPE IN
_____

Don't know (DO NOT READ OUT) .... Y

QB5   ASK ALL
And how many sites does/do this/these circuit/s connections connect?
PLEASE TYPE IN
_____

Don't know (DO NOT READ OUT) .... Y

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50% OF SAMPLE TO BE ASKED DATA CENTRES SECTION (QC1-QC3) AND 50% TO BE ASKED DARK FIBRE SECTION (QD1-QD2)

DATA CENTRES

QC1   ASK ALL
Does your business connect to a data centre?
SINGLE CODE

Yes..1
No 2
Don't know 3

QC2   ASK ALL THAT CONNECT TO A DATA CENTRE AT QC1
How does your business connect to the data centre?
SINGLE CODE

SHOW LIST OF SERVICES USED AT QS1a-c...1

QC3   ASK ALL THAT CONNECT TO A DATA CENTRE AT QC1
What is your data centre connectivity used for?
MULTICODE. READ OUT IF NECESSARY

Remote data back-up 1
Cloud computing...2
Internet access 3
Other (SPECIFY) 4
Don't know (DO NOT READ OUT)...5

QC3b   ASK ALL THAT CONNECT TO A DATA CENTRE AT QC1
Which provider/organisation provides the data centre services?
DO NOT PROMPT BUT PROBE FULLY. MULTICODE

USE FULL LIST FROM QB1 1
Own data centre 2
Don't know (DO NOT READ OUT)..3

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DARK FIBRE

QD1   ASK ALL
Have you ever made use of dark-fibre solutions to connect any of your business sites?

Dark fibre is when you lease unlit lines from a third party which make a physical connection between your sites. You are responsible for installing and operating telecoms equipment at each end of the dark fibre connection to deliver telecoms services between your sites.
SINGLE CODE

Yes...1
No 2
Don't know 3

QD2   ASK ALL THAT HAVE USED DARK-FIBRE SOLUTIONS AT QD1
You said previously that your business has [INSERT NUMBER OF SITES FROM QA3] linked via business connectivity services. How many of these are connected using dark fibre?
TYPE IN
_____

IF RESPONDENT IS NOT SURE OF EXACT NUMBER, THEN ASK THEM TO ESTIMATE THE PROPORTION
_____

Don't know (DO NOT READ OUT) .... Y

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CURRENT AND FUTURE REQUIREMENTS

MAX DIFF

QE1 ASK ALL

We'd like to know which aspects of the technology underpinning your company's business connectivity services are most and least important to your business.

I am going to read out a number of pairs of attributes of the technology and ask you to choose which of each pair is more important to you when making decisions about the services your company uses.

READ OUT FIRST ATTRIBUTE FROM FIRST PAIR, THEN SECOND ATTRIBUTE.
REPEAT FOR EACH SUBSEQUENT PAIR.

SCRIPTER: INCLUDE OPTION 'Equally important' FOR EACH

LIST OF FEATURES FOR MAX DIFF

Dedicated connection (reserved for one user) 1
Bandwidth - download speed 2
Bandwidth - upload speed 3
Symmetry (guarantees same upload and download bandwidth) 4
Availability (a measure of reliability) 5
Resilience (provides option for a second data path to provide higher availability................6
Latency (a measure of the end to end delay in transmission of data)..................................7
Jitter (a measure of variation of delay in transmission of data)...8
Range (the distance between end-user premises over which the service is available).......9

QE2 ASK ALL

Now thinking about your business connectivity requirements for the next three years please state whether each of these same service features is likely to become more important, less important or stay about the same in importance to your business.
READ OUT. SINGLE CODE PER FEATURE

	More important	Less important	About the same	Don't know/ not sure
Dedicated connection (reserved for one user)	1	2	3	4
Bandwidth - download speed	1	2	3	4
Bandwidth - upload speed	1	2	3	4
Symmetry (guarantees same upload and download bandwidth)	1	2	3	4
Availability (a measure of reliability)	1	2	3	4
Resilience (provides option for a second data path to provide higher availability	1	2	3	4
Latency (a measure of the end to end delay in transmission of data)	1	2	3	4
Jitter (a measure of variation of delay in transmission of data)	1	2	3	4
Range (the distance between end-user premises over which the service is available)	1	2	3	4

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OUTSOURCING

QF1 (QA5)   ASK ALL
I'd now like to ask you about how you manage various aspects of your business connectivity services that we've been discussing. Basically, there are several ways a company can arrange each of these, ranging from fully outsourced to managed completely in-house.

Outsourcing implies the transfer to a third party of management of some or all aspects of the enterprise network (which include all/some of the business connectivity services that make it up, but can also include the management of servers' and desktop maintenance).

For each of the following aspects of your business connectivity services, please indicate what level of outsourcing you use to manage it?

IF NECESSARY: Please think about each of these aspects as a whole rather any specific projects.

READ OUT. SINGLE CODE FOR EACH.

Service element	Completely outsourced	Mainly outsourced (more than 50%) with some aspects done in-house	Mainly in-house (more than 50%) with some aspects outsourced	Fully in-house
Design and choice of network requirements	1	2	3	4
Installation and connection	1	2	3	4
Network management /monitoring	1	2	3	4
Others?	1	2	3	4

QG3 (QD2)   ASK ALL
Do you purchase business connectivity services as a single product or as part of a wider network solution or telecoms package?
PROBE TO CODE: SINGLE CODE

All purchased as a single product 1
Sometimes purchased as single product, sometimes purchased as part of a wider package 2
All purchased as part of a wider package 3
Don't know (DO NOT READ OUT) .... Y

ASK ALL WHO PURCHASE AS PART OF A WIDER PACKAGE (CODE 2 OR 3 AT QG3)

QG4 You said that you purchase [some/all] of your connectivity services as part of a wider package. As I read out each of the services you purchase, please can you tell me whether it is purchased as part of a package across all of your sites, or as part of a package across some of your sites [CODE 2 AT QG3 ONLY] or whether it is purchased separately.

[List of QS1a-c services – e.g. PSTN, ISDN, leased lines, broadband, mobile and data etc]

Services respondent said they use	Within bundle. Across all sites	Within bundle. Across some sites only	Purchased separately in all sites
LIST SERVICES USED AT QS1a-c (QS1a CODES 1-7 OR 10 OR QS1b/c CODES 1-10)	1	2	3

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NATURE OF CONTRACTS / BARRIERS TO SWITCHING

QG1 (QD1)   From start to end, how long is your current business connectivity service contract with (INSERT COMPANY MENTIONED AT QB1. IF MORE THAN ONE COMPANY ASK QUESTION FOR EACH)?
INTERVIEWER: IF IT VARIES PLEASE OBTAIN AN ANSWER FOR A TYPICAL CONTRACT.
SINGLE CODE. IF RESOURCED INTERNALLY AT QB1, DO NOT ASK.

Up to 1 year 1
Over 1 year to 2 years 2
Over 2 years to 5 years 3
Over 5 years to 10 years 4
Over 10 years to 15 years 5
Over 15 years 6
Unable to give average – contracts are too different. ONLY ACCEPT IF THEY REALLY
CANNOT GIVE ANY OTHER ANSWER 7
No contract 8
Don't know (DO NOT READ OUT) .... Y

ASK QG6a TO QG7 TO RANDOM 50% OF SAMPLE
QG6a (QD3a)   ASK IF MORE THAN ONE SUPPLIER USED (MULTICODE AT QB1) OTHERS GO TO QG7
Why does your company use more than one supplier for your business connectivity services?
DO NOT READ OUT. PROBE FULLY. CODE ALL THAT APPLY.

QG6b (QD3b) ASK ALL
And what is the single most important reason for choosing more than one main business connectivity service provider? REDUCE LIST TO ALL THOSE STATED AT QG6A.
SINGLE CODE – RANDOMISE STATEMENTS

	QG6a	QG6b
Tend to go with best price available at time	1	1
Tend to go with the best/most advanced service available at time	2	2
Use two suppliers for same requirement - prefer to use a mix in case one lets us down	3	3
Different suppliers are better able to supply different services required	4	4
Different areas/ regions have different telecoms providers	5	5
There is more choice in different areas/regions	6	6
It's cheaper/ get better deals	7	7
Makes negotiations more competitive	8	8
No reason – just happened over the years	9	9
Different regions/offices make independent decisions	10	10
Not one single provider is capable of meeting all our service requirements	11	11
Other specify	12	12
Don't know	13	13

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QG7 (QD5)   ASK IF ONLY ONE SUPPLIER USED (SINGLE CODE AT QB1). IF RESOURCED
             INTERNALLY AT QB1, DO NOT ASK.
             You said that you rely on [a single-supplier] for multiple [sites] [services] and/or [sites and services].
             Why does your company use only one supplier for your business connectivity services?
             DO NOT READ OUT. PROBE FULLY. CODE ALL THAT APPLY.

Easier to manage one supplier	1
Negotiate better discounts/ best price	2
They understand our business	3
Provide good/reliable service	4
Offer more advanced/faster line speeds	5
Good relationships with them	6
Historic (Company always dealt with them)	7
Provide other telecoms services to us	8
Get a better service as a bundle	9
Quality of service	10
Security issues	11
Easier to handle faults	12
Bespoke security requirements	13
Other specify	14
Don't know	Y

QG8   ASK IF ONLY ONE SUPPLIER USED (SINGLE CODE AT QB1) AND WHO PURCHASE AS PART
        OF A WIDER PACKAGE (CODE 2 OR 3 AT QG3). IF RESOURCED INTERNALLY AT QB1, DO
        NOT ASK.
        Do you see having all your services with one supplier as a barrier to switching?

        Yes..1
        No 2
        Don't know (DO NOT READ OUT) .... Y

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SUBSTITUTION QUESTIONS

QH1 ASK ALL
How often do you carry out each of the following with respect to your supplier(s) of business connectivity services?
READ OUT. SINGLE CODE FOR EACH.
PROBE: Do you undertake any other activity to ensure that your business connectivity services are of sufficient quality and are cost-efficient? RECORD ACTIVITY AND FREQUENCY

	Every year	Every 2-3 years	Every 4-5 years	Less than every 5 years	Never	Don't know
Review of service quality	1	2	3	4	5	6
Review value-for-money	1	2	3	4	5	6
Benchmark or make formal comparisons with other suppliers or services	1	2	3	4	5	6
Re-negotiate contract terms (price or service)	1	2	3	4	5	6
Informally contact other suppliers for quotes outside a tender process	1	2	3	4	5	6
Formal tender	1	2	3	4	5	6
Other (SPECIFY)	1	2	3	4	5	6

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IF BOTH **SERVICE** AND **SUPPLIER** (CODES 1 AND 2) ARE SELECTED AT QH3, THEN ASK **EITHER** QH4-QH9 OR QH10-QH15, BASED ON LEAST ASKED.

QH3 ASK ALL
Have you made changes to any of the following in relation to your business connectivity services in the last three years?
READ OUT. MULTICODE.

Business connectivity service supplier 1
Service/technology underpinning your company's business connectivity services 2
Actively chose to change your speed..3
Quality of service parameters, i.e. your service level agreement..4
Contract terms 5
Other (SPECIFY) 6
Don't know (DO NOT READ OUT) ....Y
NONE OF THESE 8

QH4 ASK ALL MAKING A CHANGE TO **SERVICE** CODE 2 AT QH3
What prompted you to make a change to your service/technology?
READ OUT IF NECESSARY. MULTICODE

Cost 1
Speed 2
Reliability 3
Security 4
Other (SPECIFY) 5
Don't know (DO NOT READ OUT)..6

QH5 ASK ALL MAKING A CHANGE TO **SERVICE** CODE 2 AT QH3
Did you actively consider alternative service types to the one you selected at that time? If so, what service types did you consider?
READ OUT. MULTICODE.

Yes (SPECIFY)..1
No 2
DON'T KNOW..3

QH6 (QC4C) ASK ALL MAKING A CHANGE TO **SERVICE** CODE 2 AT QH3
What were the key factors driving you to select one business connectivity service type over the others at this time?
READ OUT IF NECESSARY. MULTICODE.

Changing requirements of my business 1
Price..2
Perceived quality 3
Easier to operate, maintain and fix problems 4
Service features..5
Bundled with other services..6
Value for Money 7
Security..8
Resilience 9
Old product/service was withdrawn..10
Other (SPECIFY) 11
Don't know/can't remember (DO NOT READ OUT) ....Y

QH7 ASK ALL MAKING A CHANGE TO **SERVICE** CODE 2 AT QH3

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What impact did switching your service/technology have on the amount you pay for your business connectivity services?
READ OUT. SINGLE CODE.

QH8 ASK ALL MAKING A CHANGE TO **SERVICE** CODE 2 AT QH3
And what impact did switching your service/technology have on internal costs?
By internal costs, we mean management or staff costs, or other operational costs?
READ OUT. SINGLE CODE.

	QH7	QH8
Large reduction	1	1
Moderate reduction	2	2
No change	3	3
Moderate increase	4	4
Large increase	5	5
Don't know (DO NOT READ OUT)	Y	Y

QH8a ASK ALL MAKING A CHANGE TO **SERVICE** CODE 2 AT QH3
Were there any large, one-off costs to your business associated with switching your service/technology?
READ OUT. SINGLE CODE.

Yes (SPECIFY)..1
No 2
Don't know (DO NOT READ OUT) .... Y

QH9 ASK ALL MAKING A CHANGE TO **SERVICE** CODE 2 AT QH3
What impact did switching your service/technology have on your quality of service?
READ OUT. SINGLE CODE.

Large positive impact..1
Moderate positive impact..2
No change 3
Moderate negative impact 4
Large negative impact 5
Don't know (DO NOT READ OUT) .... Y

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QH10 (QC5)   ASK ALL MAKING A CHANGE TO **SUPPLIER** CODE 1 AT QH3
What prompted you to make a change to your supplier?
READ OUT IF NECESSARY. MULTICODE

Cost 1
Speed 2
Reliability 3
Security..4
Product was withdrawn by that supplier 5
Repair times..6
Unhappy with existing supplier 7
Wanted product not available from existing supplier..8
Other (SPECIFY) 9
Don't know (DO NOT READ OUT)... Y

QH11   ASK ALL MAKING A CHANGE TO **SUPPLIER** CODE 1 AT QH3
Did you actively consider alternative suppliers to the one you selected at that time? If so, which other suppliers did you consider?
READ OUT. MULTICODE.

Yes (SPECIFY)..1
No 2
Don't know (DO NOT READ OUT) .... Y

QH12   ASK ALL MAKING A CHANGE TO **SUPPLIER** CODE 1 AT QH3
What were the key factors driving you to select one service provider over the others?
READ OUT IF NECESSARY. MULTICODE.

Good contacts at chosen company 1
Price..2
Reputation for quality..3
Chosen supplier(s) understand our business..4
Historic links to chosen company(s) 5
Attractive bundling 6
Length of agreement 7
Better resilience 8
Better security...9
More financially stable 10
Other (SPECIFY) 11
Don't know/can't remember (DO NOT READ OUT) .... Y

QH13   ASK ALL MAKING A CHANGE TO **SUPPLIER** CODE 1 AT QH3
What impact did switching supplier have on the cost of your business connectivity services?
READ OUT. SINGLE CODE.

QH14   ASK ALL MAKING A CHANGE TO **SUPPLIER** CODE 1 AT QH3
And what impact did switching supplier have on internal costs?
By internal costs, we mean management or staff costs, or other operational costs?
READ OUT. SINGLE CODE.

	QH13	QH14
Large reduction	1	1
Moderate reduction	2	2
No change	3	3
Moderate increase	4	4
Large increase	5	5
Don't know (DO NOT READ OUT)	Y	Y

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QH15   ASK ALL MAKING A CHANGE TO **SUPPLIER** CODE 1 AT QH3
        What impact did switching supplier have on your quality of service?
        READ OUT IF NECESSARY. SINGLE CODE.

        Large positive impact...1
        Moderate positive impact...2
        No change 3
        Moderate negative impact 4
        Large negative impact 5
        Don't know (DO NOT READ OUT) .... Y

COMPETITIVE PROCESS

QJ1   ASK ALL
        When you last reviewed whether to change supplier or business connectivity service, were you
        looking for a bespoke service or was it an off-the-peg/standard offer?
        READ OUT. SINGLE CODE

        Tailored/bespoke offer...1
        Off the peg/standard offer..2
        Either 3
        Combination of both 4
        Have not reviewed supplier or business connectivity service (DO NOT READ OUT) 5

QJ2   ASK ALL WHO HAVE REVIEWED OR CHANGED SUPPLIER OR SERVICE (QJ1 CODES 1-4)
        And what was the selection process you followed?
        READ OUT IF NECESSARY. MULTICODE

        There was only one supplier of this service available, so no selection process required 1
        Went direct to website of suppliers I wanted 2
        Tender process..3
        Used a price comparison website...4
        Renegotiated with existing supplier 5
        They contacted me 6
        Appointed a consultant to manage the process 7
        Don't know/can't recall (DO NOT READ OUT) .... Y

QJ3   ASK ALL WHO HAVE REVIEWED OR CHANGED SUPPLIER OR SERVICE (QJ1 CODES 1-4). IF
        ANSWER IS 0 GO TO QJ6
        When you came to review your supplier or service approximately how many different suppliers did
        you approach?

        TYPE IN NUMBER – IF DON'T KNOW, ASK FOR BEST ESTIMATE

        _____

        Don't know/can't recall (DO NOT READ OUT) .... Y

QJ4   ASK ALL WHO HAVE REVIEWED OR CHANGED SUPPLIER OR SERVICE (QJ1 CODES 1-4)
        And approximately how many different providers responded?

        TYPE IN NUMBER – IF DON'T KNOW, ASK FOR BEST ESTIMATE

        _____

        Don't know/can't recall (DO NOT READ OUT) .... Y

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QJ5 ASK ALL WHO HAVE REVIEWED OR CHANGED SUPPLIER OR SERVICE (QJ1 CODES 1-4)
Who were the suppliers you considered?

DO NOT PROMPT. PLEASE TYPE IN.
_____

Don't know/can't recall (DO NOT READ OUT) .... Y

QJ6 ASK ALL WHO HAVE REVIEWED OR CHANGED SUPPLIER OR SERVICE (QJ1 CODES 1-4)
Were there any factors that you felt compromised your choice of supplier/service?
MULTICODE. READ OUT IF NECESSARY.

Got management consultant / solutions provider to find one 1
Lack of suppliers in all locations 2
Limited number of suppliers with competitive prices 3
Service level agreement/service level guarantees offered were not sufficient for my needs4
Choice of services/technology..5
Preferred technology was too expensive 6
Other (SPECIFY)..7
Don't know/can't recall (DO NOT READ OUT) .... Y

QJ7 ASK ALL
Overall, how satisfied are you with the current service you receive from your main supplier?
SINGLE CODE

Very satisfied 1
Quite satisfied 2
Neither satisfied nor dissatisfied...3
Quite dissatisfied 4
Very dissatisfied 5
Don't know (DO NOT READ OUT).. Y

QJ8 ASK ALL WHO ARE DISSATISFIED AT QJ7 (CODE 4 OR 5)
Are the issues with your service sufficiently important that you will actively switch to a different
service and/or supplier when your contract minimum term elapses or review period occurs?
MULTICODE ALLOWED FOR CODES 1 AND 2

Switch supplier...1
Switch service/technology 2
Neither 3
Don't know (DO NOT READ OUT).. Y

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QG2 (QD7)   ASK ALL
What, if any, are the main barriers to you switching any Data and/or Voice services?
READ OUT IF NECESSARY – MULTICODE. SCRIPTER: RANDOMISE LIST

Good contacts at existing company 1
Price..2
Hassle..3
Current supplier(s) understand our business 4
Historic links to existing company(s) 5
Easier to manage existing supplier relationship...6
High internal costs associated with switching 7
High installation costs associated with switching 8
Locked in with existing supplier until contract expires...................................9
Risk of new service not working as well as the old service 10
Time it takes to research the different alternatives..11
Time it takes to tender for an alternative service..12
The potential for service disruption 13
Parallel operation while new service is tested...14
Change of customer premises equipment...15
Connections take too long...16
Other (SPECIFY)...17
Don't know (DO NOT READ OUT) .... Y

QJ9   ASK ALL USERS OF LEASED LINES FROM QS1A (CODES 8 OR 9)
You may be aware of standard or superfast asymmetric fibre broadband services. The latter offers
headline speeds starting at 38Mbit/s and can be higher depending on location.

Have you ever actively considered this as an alternative to your current leased line services?
SINGLE CODE. READ OUT.

Yes, actively considered but rejected it 1
Yes, actively considered and plan to switch at end of current contract 2
No, not actively considered it..3
Don't know (DO NOT READ OUT).. Y

QJ10   ASK ALL SAYING 'NO' AT QJ9
How likely would you be to consider switching to asymmetric broadband in the future?
SINGLE CODE

Very likely 1
Quite likely 2
Neither likely nor not likely...3
Quite unlikely 4
Very unlikely 5
Don't know (DO NOT READ OUT).. Y

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QJ11   ASK ALL USERS OF LEASED LINES FROM QS1A (CODES 8 OR 9)
Do you see any particular challenges or concerns about switching your business connectivity services from leased lines to asymmetric broadband?
READ OUT IF NECESSARY. MULTICODE.

Can't meet bandwidth/speed needs (download) 1
Can't meet bandwidth / speed needs (upload) 2
Unsure of reliability of asymmetric broadband 3
Insufficient service level agreements or service level guarantees 4
Unsure of resilience of asymmetric broadband 5
Latency/jitter issues 6
Unsure of security of asymmetric broadband...7
I would have to change a number of other systems in my business................................8
Prices of asymmetric broadband aren't that attractive/worth switching for 9
Not available in the UK at all my sites 10
I'm looking to upgrade to faster speed, higher quality leased lines.................................11
Any other concerns (SPECIFY)..12
No concerns.. Y

QJ12   ASK ALL USERS OF SDH/PDH/ANALOGUE SERVICES AT QS1B OR C (CODES 1 OR 2)
Have you ever actively considered using Ethernet leased lines as an alternative to your current [SDH or PDH digital leased Lines] [Analogue leased lines] services?
SINGLE CODE. READ OUT.

Yes, actively considered but rejected it 1
Yes, actively considered and plan to switch at end of current contract 2
No, not actively considered it..3
Don't know (DO NOT READ OUT)... Y

QJ13   ASK ALL SAYING 'NO' AT QJ12
How likely would you be to consider switching to Ethernet leased lines in the future?
SINGLE CODE

Very likely 1
Quite likely 2
Neither likely nor not likely...3
Quite unlikely 4
Very unlikely 5
Don't know (DO NOT READ OUT)... Y

QJ14   ASK ALL USERS OF SDH/PDH/ANALOGUE SERVICES AT QS1B OR C (CODES 1 OR 2)
Do you see any particular challenges or concerns about switching your business connectivity services from [SDH or PDH digital leased Lines] [Analogue leased lines] to Ethernet leased lines?
READ OUT IF NECESSARY. MULTICODE.

Unsure of reliability of Ethernet leased lines 1
Insufficient service level agreements or service level guarantees 2
Unsure of resilience of Ethernet leased lines 3
Latency/jitter issues 4
Unsure of security of Ethernet leased lines 5
I would have to change a number of other systems in my business................................6
Prices of Ethernet leased lines aren't that attractive/worth switching for 7
Not available in the UK at all my sites 8
I'm looking to upgrade to faster speed, higher quality leased lines.................................9
Any other concerns (SPECIFY)..10
No concerns.. Y

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QK1   ASK ALL USERS OF LEASED LINES FROM QS1A (CODES 8 OR 9)
       Over the next 3-5 years, how likely is your company to replace your current leased lines with a
       different service?

       Very likely 1
       Quite likely 2
       Neither likely nor unlikely...3
       Quite unlikely 4
       Very unlikely 5
       Don't know 99

QK1a (FORMERLY QJ8d)
       ASK IF LIKELY (CODE 1 OR 2 AT QK1)
       Why do you plan to change your service/technology?
       READ OUT IF NECESSARY. MULTICODE

       Cost 1
       Speed 2
       Reliability 3
       Security...4
       Other (SPECIFY) 5
       Don't know (DO NOT READ OUT).. Y

QK2   ASK IF LIKELY (CODE 1 OR 2 AT QK1)
       And is your company likely to replace leased lines with any of the following services?
       READ OUT. MULTICODE

       Broadband (either SFBB or ADSL) 1
       Ethernet 2
       Wave Division Multiplexed Services...3

QX1   Thank you very much for your time. That's the end of the interview.

       This survey is part of a wider piece of research about business connectivity services that Ofcom is
       currently conducting. Would you be willing to be contacted by us, or another market research
       agency working on behalf of Ofcom, to take part in further research on this topic?

       SINGLE CODE

       Yes..1
       No 2

       IF YES:
       Record best telephone number to be contacted on:………………………………………….

       **That's the end of the interview Mr/Mrs _____. Thank you very much for your time
       and help with this survey. I would just like to confirm that my name is _____
       and I have been calling you from BDRC Continental in London and that all the answers you
       have given me will be treated in the strictest confidence. Should you wish to verify this
       information I can provide you with both the name and number of the executive in charge of
       this survey or alternatively you can ring 0500 39 69 99 and be put through to FREEPHONE
       MARKET RESEARCH SOCIETY who will also be able to confirm our status as a legitimate
       Market Research Agency.**

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C. Glossary of Terms

The following glossary of terms helps explain the acronyms used in this report and was used by interviewers during the interview if needed:

- **ADSL:** Asymmetric Digital Subscriber Line - A type of <u>digital</u> <u>subscriber</u> <u>line</u> technology, a data communications technology that enables faster data transmission over <u>copper</u> <u>telephone</u> <u>lines</u> than a conventional <u>voice</u> <u>band</u> <u>modem</u> can provide.
- **Availability**: A measure of the reliability of the service
- **Bandwidth:** The amount of data that can be carried from one point to another in a given time period (usually a second). This kind of bandwidth is usually expressed in kilobits (kbit/sec) or megabits (of data) per second (Mbits/sec).
- **BCS:** Business Connectivity Services are defined as those which carry voice and/or data traffic between business sites to enable communication within an organisation.
- **Bundling:** A marketing strategy that involves offering several products for sale as one combined product
- **Business Data Connectivity**: A communications service that is used to link a number of end-user business premises for the purposes of intercommunication between those premises
- **Contended/dedicated:** A dedicated service reserves all the available bandwidth for the exclusive use of one end-user/customer; a contended service shares the available bandwidth among more than one end-user/customer
- **ISDN:** Integrated Services Digital Network - A digital telephone service that supports the simultaneous <u>digital</u> <u>transmission</u> of voice, video, data, and other network services over the PSTN.
- **Jitter:** A measure of the variation of delay in the transmission of data
- **Latency**: A measure of the end to end delay in the transmission of data
- **Leased Line**: A service contract between a provider and a customer, whereby the provider agrees to deliver a symmetric telecommunications line connecting two or more locations in exchange for a monthly rent (hence the term lease). Typically, leased lines are used by businesses to connect geographically distant offices. Unlike dial-up connections, a leased line is always active.
- **MPLS**: Multiprotocol Label Switching - A packet based network technology typically used to provide VPN services to businesses.
- **PSTN:** Public Switched Telephone Network - The international network that provides circuit switched voice telephone services under end-user control.
- **Range:** The distance between end-user premises over which the service is available
  - *Access:* Up to the first serving exchange;
  - *Metro:* Within a geographic region or city
  - *Long:* Any distance
- **Resilience**: A resilient service provides an option for a second data path to provide higher availability
- **SDSL:** Symmetrical Digital Subscriber Line. Like ADSL but with equal upload and download speeds.
- **Symmetry**: A symmetric service guarantees the same upload and download bandwidth
- **Voice over Internet Protocol** (**Voice over IP**, **VoIP**): a family of technologies, methodologies, communication protocols, and transmission techniques for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet. Other terms frequently encountered and often used synonymously with VoIP are *IP telephony*, *Internet telephony*, *voice over broadband* (VoBB), *broadband telephony*, and *broadband phone*.
- **VPN:** Virtual Private Network- A service provided on a public telecommunications network that provides businesses with inter-site connections emulating those of a private network.

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D. Pilot interviews

The first ten interviews conducted between 7th and 8th July were treated as 'pilot' interviews and fieldwork was temporarily halted between 9th and 17th July so that the initial results could be examined to assess whether any modifications needed to be made to the questionnaire for the remaining interviews.

The pilot involved:

- Listening in to some of the interviews to check the questionnaire ran smoothly and respondents generally understood the questions and able to provide answers.
- Checking the average length of the questionnaire (to check it wasn't too onerous).
- Analysing the answers to the open-ended questions to see whether respondents raised any key issues not covered in the core questionnaire.
- Talking to the interviewers themselves to ensure they fully understood the questionnaire and whether they themselves had noticed any respondent difficulty with the survey.

There were no major changes recommended as a result of the pilot with regard to understanding or areas not covered, however some questions included in the initial interviews were removed for the main survey to reduce the length and consequent burden on the respondent.

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