



BT OSS Separation

Proposed Amendments to Section 5 (separation of systems shared between Openreach and the rest of BT) of the Enterprise Act Undertakings given by BT to Ofcom

Statement

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Section 1

Executive Summary

- 1.1 On 22nd September 2005, BT Group plc ('BT') offered and Ofcom accepted a set of undertakings ('the Undertakings') pursuant to Section 154 of the Enterprise Act 2002 in lieu of a reference of certain markets to the Competition Commission. The acceptance of the Undertakings was aimed at addressing Ofcom's competition concerns in these markets through, *inter alia*, the implementation of what has been termed "Equality of Access" for all communications providers.
- 1.2 The physical separation of Operational Support Systems ('OSS') currently shared between Openreach and the rest of BT is a key part of Equality of Access as it reduces the capability and incentive of BT for non-price discrimination. As such Section 5.44 of the Undertakings requires BT to:
- Physically separate Openreach Operational Support Systems from the rest of BT by 30th June 2010;
 - Design all new Openreach systems to be separate from the rest of BT;
 - In the interim, until full physical separation is achieved, deliver a logically separate Operational Support System capability for certain product groups according to binding milestones; and
 - Review regularly with Ofcom a roadmap for achieving physical separation by 30th June 2010.
- 1.3 In reviewing BT's roadmap, Ofcom gained an increased understanding of the challenges that the physical separation of Operational Support Systems represents. As a result of the review, Ofcom consulted on proposals to vary Section 5.44 of the Undertakings. The aim of the proposed Variation was to strengthen the effectiveness of the Undertakings in the long term by introducing a series of binding interim milestones from now until the completion date of 30th June 2010. These binding milestones would enable progress towards physical separation to be measured at key stages in the programme, thereby providing visibility of, and the opportunity to mitigate, any risks that might jeopardise either the final delivery of full physical separation by 30th June 2010, or the customer experience in the interim.

Consultation proposals

- 1.4 Given the technical complexity of physical separation, the changes it requires to BT's business and the role Operational Support Systems play in enabling BT to interact with and manage its customers, there is a risk of detrimental impact on the consumer service experience. A key objective in the development of the roadmap and its review with Ofcom was to understand and mitigate this risk. To this end 'Ready to Mass Migrate' milestones were included; they mark the point at which the preparation and testing of the operational capability to support mass migration between systems at the required volumes without detriment to consumers will have been completed.
- 1.5 The protection of the consumer experience during the migration process is one of our primary objectives: customers must have uninterrupted access to service even as data is migrated. Considerable emphasis was therefore placed on balancing the speed of physical separation with minimising the risk of customer disruption.

- 1.6 In developing the proposed Variation, Ofcom examined BT's approach to systems separation. BT is implementing physical separation in accordance with their long term strategy for their systems estate, that is to say, it is building new physically separate operational systems for Openreach and the rest of BT, and moving data that is currently in shared systems to these new systems, closing legacy systems where possible. It is Ofcom's view, supported by independent expert scrutiny, that at this stage, this approach is the most effective in terms of achieving physical separation as early as possible consistent with minimising the risk to the consumer experience.
- 1.7 BT will implement physical separation progressively; volume migration began in June 2006, and peaks in 2008/9 leaving a "tail" to be completed in 2010. It will therefore take several years, but will have to be achieved by 30th June 2010, the date originally set in the Undertakings. In the interim BT will implement strengthened user access controls for Equivalence of Input ('EOI') products supported on shared systems. Given this, and the increased transparency resulting from the binding milestones, Ofcom proposed it was no longer necessary to require the implementation of a logically separate Operational Support Systems capability, previously included to reflect the need to protect against non-price discrimination in the period up to full physical separation. It was Ofcom's view that, with the appropriate audit measures in place, BT's implementation of user access controls together with other measures set out in the Undertakings would provide proportionate protection against non-price discrimination prior to full physical separation by 30th June 2010. We therefore proposed that the Variation require regular internal audit and at least two external audits, the results of these audits to be reported to the Equality of Access Board ('EAB') and Ofcom.
- 1.8 Ofcom consulted on a Variation to the Undertakings incorporating the binding milestones indicated in the table below. In this table, customer-side relates to the migration of data records pertaining to real end-customers, e.g. other communication providers ('CPs') and consumers, and supply-side relates to the migration of BT Wholesale data records in its role as supplier to Openreach (e.g. for the supply of electronics used in Openreach products).

Table 1 Binding milestones towards physical separation

User Access Controls	WLR Analogue, SMPF, MPF ¹	WLR ISDN2 ¹	WLR ISDN30 ¹	
	30 th June 2007	30 th Sept 2007	30 th Dec 2007	
Ready to Mass Migrate	PSTN Customer-side		Featureline Customer-side	
	31 st March 2008		30 th June 2009	
Migration Progress	Customer-side		Supply-side	
	50% migrated	90% migrated	50% migrated	90% migrated
	30 th Nov 2008	30 th Sept 2009	31 st May 2009	31 st Jan 2010
Physical Separation Complete	June 2010			

Consultation responses

- 1.9 Ofcom received four responses to the consultation: BT, Cable and Wireless ('C&W'), Carphone Warehouse ('CPW'), and Scottish and Southern Energy ('SSE').
- 1.10 C&W, although welcoming the milestones and the greater transparency they provided, was critical of the proposals to remove the requirements for logical separation, which in C&W's view represented the removal of the obligations to implement measures against non-price discrimination. C&W sought further reassurance as to the programme of engagement for reviewing progress against the roadmap.
- 1.11 CPW believed the Variation would relax the obligations on BT and undermined the effectiveness of the Undertakings. CPW did not believe that user access controls were as effective a measure against non-price discrimination as the requirement to "logically separate" systems and therefore believed that the proposals would weaken the Undertakings. In CPW's view, the Variation sent the wrong message to CPs reliant on Ofcom to enforce the Undertakings. If the Variation was implemented, then CPW requested an immediate audit of the effectiveness of user access controls.
- 1.12 BT and SSE were supportive of the Variation as proposed in the consultation. SSE, a vertically integrated company in the energy sector, subject to systems separation requirements by its regulator, stated they were comfortable with the approach taken. SSE added that the proposed application of user access controls represented a workable solution.
- 1.13 BT suggested a sub-clause to the effect that physical separation would be required unless an alternative was agreed with Ofcom. BT stated its intention was to allow flexibility in the implementation of physical separation in relation to systems and processes for the supply of services by BT Wholesale into Openreach, given ongoing discussions as to the position of the boundary between the two organisations.

¹ Applicable to EOI products

Ofcom's conclusions

- 1.14 Ofcom recognises legitimate CP concerns as to the effectiveness of user access controls and shares CPW's view that an immediate audit of BT's implementation of user access controls would help provide reassurance. To this end, Ofcom proposed to BT the inclusion of an additional internal audit as soon as practicable immediately following 30th June 2007, the date from which the first obligation for the application of user access controls comes into effect. BT agreed to this proposal. This audit is incorporated in the Variation in clause 5.44.5 (b). The audit is to be completed by 31st December 2007. The results of this audit will be shared with the EAB and Ofcom.
- 1.15 Ofcom believes that transparency of the programme of engagement with BT is important in maintaining industry confidence that physical separation will be delivered on schedule and without detrimental impact to the customer experience. We therefore set out in the 'Next Steps' section of this Statement further detail of our proposed engagement.
- 1.16 Ofcom recognises BT's concern that the ongoing discussions with BT regarding the boundary for the supply of electronic components of Openreach products by BT Wholesale might impact the boundary for the physical separation of Operational Support Systems. Further dialogue with BT revealed a related issue centred on the shared use of network assets between Openreach and BT Wholesale in the provision of optical fibre transmission services² to their respective customers. The Undertakings do not prohibit the shared use of network assets in the provision of optical fibre transmission services; they are closely tied into certain Operational Support Systems, which are also currently shared. Physically separating these Operational Support Systems whilst maintaining existing levels of service - in fault management, for example – for both Openreach and BT Wholesale customers may prove problematic. This issue applies to fewer than 20 out of around 6,000 BT Operational Support Systems.
- 1.17 Ofcom considers these concerns may prove to be well founded. We have therefore, for reasons of transparency, accepted the inclusion of a sub-clause similar to that suggested by BT. This sub-clause will allow flexibility in the implementation of physical separation of Operational Support Systems with regard to supply-side boundary changes and for certain systems related to the supply of optical fibre transmission services. The inclusion of this sub-clause does not alter the obligation on BT to physically separate Operational Support Systems shared between Openreach and the rest of BT by 30th June 2010, or the nature of that separation. Ofcom will work with BT to determine whether it is possible to separate the systems concerned without significant impact on the end-user experience.
- 1.18 As the Variation does not change the obligations of the Undertakings, but seeks to strengthen their effectiveness in the long term, it is Ofcom's view that the proposed Variation does not constitute a material change to the Undertakings and that the Undertakings continue to represent a comprehensive solution as is reasonable and practical to the adverse effects on competition identified. Ofcom has therefore agreed with BT to vary the Undertakings as set out in our consultation and summarized above. The exact wording of the Variation can be found in Annex 1 to this statement.

² Optical fibre transmission services carry high capacity data services

Section 2

Background

- 2.1 On 22nd September 2005, BT offered and Ofcom accepted pursuant to Section 154 of the Enterprise Act 2002³ undertakings in lieu of a reference of certain markets to the Competition Commission (“the Undertakings”). The Undertakings are set out in full in the document entitled *Final statements on the Strategic Review of Telecommunications, and undertakings in lieu of a reference under the Enterprise Act 2002*.⁴ The Undertakings address the competition concerns identified in the Strategic Review of Telecommunications (“the Review”), *inter alia*, through the implementation of what has been termed “Equality of Access” for all communications providers (‘CPs’).
- 2.2 Equality of Access consists of two concepts: Equivalence of Inputs (‘EOI’) to products for CPs; and operational separation, which includes the creation of a separate division within BT referred to as “AS” in the Undertakings and operating under its brand name Openreach. The Undertakings explicitly recognise the importance of systems in delivering both parts of Equality of Access for CPs.
- 2.3 In the definition of Equivalence of Inputs the Undertakings state:
- “Equivalence of Inputs” or “EOI” means that BT provides, in respect of a particular product or service, the same product or service to all Communications Providers (including BT) on the same timescales, terms and conditions (including price and service levels) by means of the same systems and processes, and includes the provision to all Communications Providers (including BT) of the same Commercial Information about such products, services, systems and processes. In particular, it includes the use by BT of such systems and processes in the same way as other Communications Providers and with the same degree of reliability and performance as experienced by other Communications Providers”.
- 2.4 The second aspect of Equality of Access, operational separation, is concerned with ensuring that Openreach acts as a separate division within BT as required, *inter alia*, by Section 5.23 of the Undertakings. Operational separation includes the effectiveness of “Chinese Walls” between the different parts of the BT organisation making sure that Commercial Information (‘CI’) and Customer Confidential Information (‘CCI’), as defined in the Undertakings, is not inappropriately shared across BT, both between Openreach and the rest of BT, and within the rest of BT, as well as the separation of BT’s Management Information and Operational Support Systems.
- 2.5 The Undertakings therefore set out certain requirements and deadlines for the physical separation of Operational Support Systems currently shared between Openreach and the rest of BT as follows:

³ <http://www.opsi.gov.uk/acts/acts2002/20020040.htm>

⁴ http://www.ofcom.org.uk/consult/condocs/statement_tsr/statement.pdf

BT shall

5.44.1 – ensure that all its Operational Support Systems designed for AS are designed on the principle of separation from the rest of BT systems;

5.44.2 – ensure that AS will have a logically separate Operational Support Systems capability that supports Wholesale Analogue Line Rental, Shared Metallic Path Facility and the Metallic Path Facility by June 2007, Wholesale ISDN2 Line Rental by 30 September 2007 and Wholesale ISDN30 Line Rental by 31 December 2007. The rigour of such separation shall be tested through an external audit.

5.44.3 – physically separate its Operational Support Systems such that these systems are run physically separately for AS and the rest of BT by 30 June 2010; and

5.44.4 – review on a regular basis with Ofcom achievement on a roadmap for separation referred to in Sections 5.44.1, 5.44.2 and 5.44.3.

- 2.6 According to section 18.1 of the Undertakings, BT and Ofcom may, from time to time, vary the Undertakings by mutual agreement. On 27th March 2007, Ofcom published a consultation seeking views on proposals for varying the above sections of the Undertakings with regard to Operational Support Systems.

Section 3

Systems separation and Equality of Access

Operational Support Systems

- 3.1 Operational Support Systems are defined in the Undertakings as "those support systems carrying out the functions and processes which help to run a network and business, including (but not limited to) pre-ordering, taking a customer's order, configuring network components, creating a bill and managing faults." Operational Support Systems are therefore critical in supporting all of the major functions and processes carried out in the course of a CP's business. In many processes every transaction is carried out by or supported by systems with little or no manual fallback: when systems are "down" there is a potential for adverse impact on customer service. Operational Support Systems are central to a CP's interaction with its customers, in the provisioning and maintenance of customers' services and managing its customer relationships. In many CP organisations, Operational Support Systems are subject to constant change resulting from the fast changing telecommunications business environment and ever evolving technology.
- 3.2 Operational Support Systems are very complex owing to the large customer base supported by CPs and the complexity of services they provide, coupled with the requirement for continuous availability and high levels of reliability. For example, BT's main Operational Support System, called Customer Support System and known as CSS, typically carries out 150 thousand customer orders and generates 500 thousand customer bills per day. Some Operational Support Systems are 'proprietary' having been developed in-house and are modified in line with changing business requirements over time. These are known as "legacy" systems. Due to the ageing technology of these systems, and the many changes they have undergone, they have become increasingly difficult to maintain and enhance.
- 3.3 BT's current Operational Support Systems and physical network were designed at a time when BT was a highly integrated organisation. This led to the design of an integrated network with fibre and electronics that provide the full range of access, backhaul and core optical fibre transmission services⁵. It also led to the use of shared systems and processes crossing organisational boundaries, with the objective of optimising customer service and efficiency. As a result, many of BT's operational transactions have been automated and integrated right from the customer interaction at the call centre or web-site to the detailed network element management required to activate or configure a service on the network.

Contribution of physical separation of systems to operational separation

- 3.4 Although physical separation of systems is often seen as a purely technical task, the demands it makes for rigorous examination of business relationships, interfaces, processes, data and organisations are at the heart of running a business and therefore, in the case of BT, what it means to achieve operational separation. As part of implementing physical separation for Operational Support Systems, BT has therefore put in place a wide reaching business change programme that is intended

⁵ Optical fibre transmission services carry high capacity data services.

to deliver separation not only of systems but also separation in cultural, business, process and organisational terms, leading to real operational separation.

- 3.5 In addition, physically separating the Operational Support Systems ensures clear interfaces to business functions, enabling greater transparency in monitoring non-price discrimination.
- 3.6 The introduction of a new business boundary between Openreach and the rest of BT and the division of services between these two organisations cuts right through shared network assets and the associated systems and processes. Physically separating these systems while retaining high standards of customer service is a complex task and priority is being given to ensuring there is no deterioration in service to customers, many of which are other CPs.

Contribution of systems separation to Equivalence of Input

- 3.7 The separation of systems shared between Openreach and the rest of BT also contributes to the delivery of equivalence of input by helping to ensure that CPs receive the same inputs as the rest of BT, in respect of the same level of access to Openreach systems. This contribution is explicitly recognised in the definition of EOI given in the Undertakings and cited in paragraph 2.3 of this statement. Until physical separation is achieved, user access controls enable systems separation for the purpose of protecting against non-price discrimination.

Ofcom's approach to the varying of the Undertakings

- 3.8 Section 154 of the Enterprise Act required that Ofcom when it accepted the Undertakings from BT should "have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the adverse effect on competition". Therefore, in considering the case for varying the Undertakings, Ofcom must consider whether this solution is materially and negatively affected by the Variation in question.
- 3.9 The importance of physical systems separation was reflected in the Undertakings and, until such physical separation for Operational Support Systems was achieved, an interim solution was included. Since then, BT has implemented a comprehensive review of its systems estate and developed a roadmap for the process to achieve physical separation of all Operational Support Systems shared between Openreach and the rest of BT by 30th June 2010. The next section lays out how the Variation upon which we consulted, incorporated milestones from the roadmap into the Undertakings in order to improve the transparency of the progress to physical separation, reduce the risk to the consumer experience, and further demonstrate to CPs that physical separation of systems is making operational separation a reality and therefore contributing towards the achievement of real Equality of Access.
- 3.10 It is Ofcom's view that the Variation does not materially affect the comprehensive solution that the Undertakings represent. Furthermore, Ofcom considers that the Variation will not have a negative impact on the comprehensive solution and in particular Equality of Access. In our view, the Variation will strengthen the effectiveness of the Undertakings in the long term: the binding interim milestones increase the transparency of BT's progress to achieving the key Equality of Access requirement of physical system separation. As such, the binding milestones reduce the risk both to industry of missing the physical separation deadline and to consumers of disruption to the service experience. The user access controls backed by regular internal and independent external audit, provide protection against non-

price discrimination in the interim, whilst the increased transparency also helps competitive providers prepare the process and systems changes they must make in order to work with BT's physically separated systems and supporting processes.

Section 4

The implementation of separation and Ofcom's proposals

BT's roadmap for physical separation

- 4.1 The Undertakings require BT to review on a regular basis with Ofcom a roadmap showing progress towards the delivery of physical separation. BT has now developed and shared with Ofcom a final version of the required roadmap, which describes how and when physical separation will be achieved; and established a formal company wide programme and a plan for delivering physical separation. The recent organisational changes within BT, with the creation of BT Design and BT Operate, may change the division of responsibility for the delivery of separation and may result in changes to the roadmap, but will not alter the binding milestones incorporated in the Variation. It is BT's plan to share the revisions to the roadmap with Ofcom in July. The roadmap is detailed, and since it contains information which is commercially sensitive, it is not appropriate to require it to be shared with industry.

BT's programme management

- 4.2 The physical separation of BT's systems involves significant programmes covering business units, product teams, company wide management, risk management, and governance processes. These are described below.

Business units

- 4.3 Each of the pre-existing BT Line of Business ('LoB') - BT Wholesale, BT Retail, BT Global Services, BT Group and Openreach - have a programme of work to deliver the changes necessary to implement physical separation. Each LoB programme has strong business and operational involvement. This is essential as the changes required to implement physical separation are not purely technical but require re-definition of business relationships, formal product and service definitions, process re-engineering, re-training and change management. BT's recent re-organisation resulting in the creation of BT Design and BT Operate may change where parts of these programmes sit within its overall organisational structure. Ofcom will be reviewing these changes with BT.

Product teams

- 4.4 The Product and Portfolio teams are also included within the overall programme since the portfolio will affect the speed and risk of separation. A significant part of the "tail" of the migration process, described in the next section, is due to complex products and their combined use by certain groups of customers.

Company wide management

- 4.5 In order to achieve physical separation the individual LoBs need to co-ordinate and cooperate to allow shared data records to be migrated to the new separate systems without any disruption to customer service. This alignment is managed by the company wide programme, led by a senior and full-time programme director and supported by a senior full-time programme manager. A dedicated company wide

programme team works with the various business teams and technology teams to ensure that all the required activities are planned and executed according to the roadmap shared with Ofcom.

- 4.6 The roadmap sets out significant changes to BT's major Operational Support Systems. These systems are subject to many other changes in support of other business programmes, such as BT's 21st Century Network. The company wide programme team has ensured that the changes required for physical separation have been prioritised and built into the change programmes of all the major Operational Support Systems.

Risk management

- 4.7 The physical separation programme is complex and has the potential to disrupt customer service. For this reason, particular attention has been given to identifying all known risks, their likelihood, the potential impact on the programme and consumers and a plan for the mitigation of the risks identified.

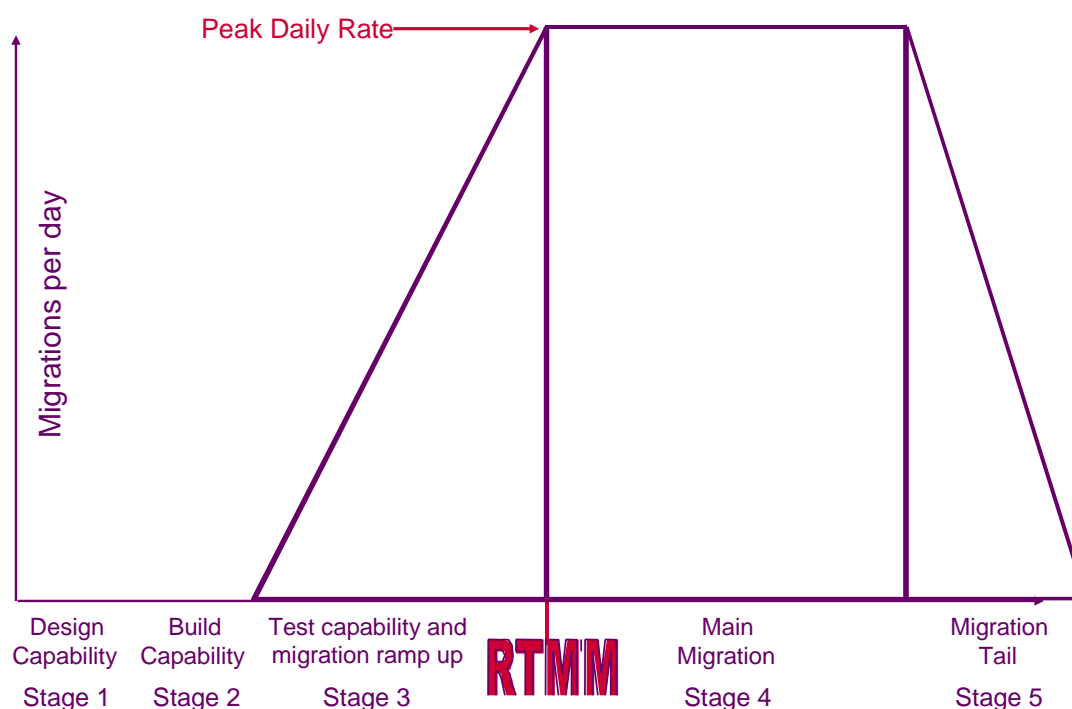
Governance process

- 4.8 The process for physical separation of Operational Support Systems has high visibility at the most senior levels within BT. The progress of physical separation will be regularly reviewed by BT's internal Systems Separation Steering Committee and reported to BT Group Undertakings Forum - the steering forum with overall responsibility for setting BT's direction in relation to the Undertakings. Ofcom will review progress against the roadmap with BT on a regular basis, as set out in paragraph 7.5.

The process of separation

- 4.9 There are five major stages to achieving physical separation as shown in the diagram below and outlined here:
- 1) Design the separated systems, supporting processes and interfaces to allow cross business working via gateways replacing access via shared systems;
 - 2) Build the separated systems, processes and interfaces, and train users (e.g. service agents) to deal with "separated" customer transactions;
 - 3) Preparation in readiness to mass migrate - testing and migration ramp up, including trial migrations in the lead up to the "Ready to Mass Migrate" milestones;
 - 4) Mass migration of data and applications to the new or re-engineered systems;
 - 5) "Tail" migration of small complex customers and legacy services not amenable to automated volume migration.

Figure 1: The process of separation (illustrative)



- 4.10 In addition, there are two major migration types: **customer-side record migrations** where data records relating to real end-customers are moved to each of BT's downstream business units; and **supply-side record migrations** where data records relating to BT Wholesale in its role as supplier to Openreach (e.g. for the supply of electronics used in Openreach products) are separated between BT Wholesale and Openreach systems. The boundary for the supply of electronics between BT Wholesale and Openreach is currently the subject of ongoing discussions between Ofcom and BT, as a result of which the boundary may change. A change to this boundary may alter the location at which physical separation of Operational Support Systems occurs on the supply-side, but not the requirement for physical separation.
- 4.11 To complete separation, BT must carry out over 35 million customer-side record migrations and over 25 million supply-side record migrations. Once a customer service record has been migrated to the new LoB systems, the new processes come into operation. The LoB users are then accessing separate applications and data on physically separate systems. Openreach generally retains control and exclusive use of the remaining data records, however in some cases these records are migrated to a new separate system also. Completing the over 60 million record migrations will take a considerable time and it is only once the last record has been migrated that the shared systems become fully separated. There are also different degrees of impact on the BT service agents and other users of BT systems. Once customer-side record migration is complete, it separates a large number of users from accessing shared data records – approximately 16,000. The supply-side record migration, which will occur later in the plan, separates a smaller number of users – approximately 3000.

Measuring progress

- 4.12 The Variation as proposed incorporated a number of legally binding milestones from the roadmap into the Undertakings, providing increased transparency of the physical separation process. These milestones focus on readiness to migrate, mass migration and the implementation of user access controls.

Demonstrating readiness to migrate

- 4.13 Ready to Mass Migrate ('RTMM') milestones occur at the end of Stage 3 when the new systems capability is complete, several pilot migrations of varying volumes have been made and any corrective action identified and completed. At this point mass migration can commence. It should be noted however that once commenced the rate of migration may fluctuate as appropriate. RTMM milestones provide an important quality control checkpoint.
- 4.14 Within the roadmap there are many RTMM milestones for the various product groups and types. Public Switched Telephone Network ('PSTN') migration will be used to give visibility of the point at which a volume domestic product is ready for mass migration; correspondingly, Featureline will be used for volume business products. Whilst Featureline is of declining importance in competition terms, it has a significant installed base and will therefore provides an important measure of readiness to mass migrate.

Measuring the rate of migration

- 4.15 During the migration phase, progress is measured by the percentage of migrations that have been completed. It is useful here to distinguish between customer-side record migration and supply-side record migration. This is because they are the subject of two separate migration activities and measure two different aspects of the capacity for non-price discrimination. Customer-side and supply-side Migration Progress milestones are incorporated into the Variation to the Undertakings.
- 4.16 There is clearly some burden in identifying and measuring each data record migration as it is completed. For some complex or rarely used products this burden may not justify the contribution migration makes to the overall migration progress assessment. Therefore, the measure will consider the following set of products, which make up the vast majority of customer records (98%):
- Wholesale Analogue Line Rental
 - Wholesale ISDN2 Line Rental
 - Wholesale ISDN30 Line Rental
 - Metallic Path Facility
 - Shared Metallic Path Facility
 - Wholesale Extension Service
 - Backhaul Extension Service
 - Wholesale Extension Service Backhaul Product

- Wholesale Extension Service Access Product
 - Wholesale End-to-End Ethernet Service.
- 4.17 As the end of the migration process will be delayed for some months because of the "tail" of more complex customers and services, which may affect relatively few customer records, it is useful to mark the points at which 50% and 90% of migrations have been completed. These points - applicable to both customer-side migrations and supply-side migrations - will be used to monitor progress.
- 4.18 The Undertakings already include a date - 30th June 2010 - for all systems to be physically separated and it has been Ofcom's firm intention throughout to retain this milestone.

Application of user access controls during separation

- 4.19 During the period up to the June 2010 deadline for physical separation, BT will implement interim measures through the application of user access controls. These controls restrict access to data records on applications and systems shared between Openreach and the rest of BT and will be applied to the following EOI products: Wholesale Analogue Line Rental, SMPF, MPF, Wholesale ISDN2 Line Rental and Wholesale ISDN 30 Line Rental.
- 4.20 BT's implementation of user access controls, in common with standard industry practise, is based on three key features: **user identification** when users access a system, **user profiles** which define what a given user can do, and **data tagging** which associates an item of data with a particular LoB. Any transaction attempting to access data that is protected will fail without impact to the operation of the system in question and not return the protected data. Any access control system must also include a strict regime policing the means of access. BT has put in place measures to ensure that user identification and profiles are kept up to date and that there is a formal procedure for gaining access to user profiles. Whilst this should give reassurance to CPs that there is protection against non-price discrimination whilst separation is being implemented, it should also be noted that BT's cultural and organisational changes also provide protection against non-price discrimination during this period.
- 4.21 Ofcom is satisfied that BT's implementation of user access controls, together with other measures set out in the Undertakings, provides proportionate interim protection against non-price discrimination when supported by a rigorous audit regime. Therefore, in the Variation upon which we consulted, BT was required to subject user access controls to regular internal audit, reporting to the EAB, which would in turn report any issues to Ofcom; a further independent, external audit focussing on risk assessment, solution design, implementation assessment and ongoing controls to be completed by 30th June 2008; and an additional independent, external audit focussing on the ongoing application of user access controls before the end of the interim period. Given this, and the increased transparency resulting from the binding milestones, Ofcom proposed it was no longer necessary to require the implementation of a logically separate Operational Support Systems capability, previously included to reflect the need to protect against non-price discrimination in the period up to full physical separation.

Section 5

Responses to the Consultation and Ofcom's Conclusions

5.1 This section provides a summary of the key points from the responses to the consultation⁶, Ofcom's assessment of the points raised and our decision with regard to the Variation.

Summary of responses

BT

5.2 BT expressed full support for the proposed Variation and agreed with Ofcom that it did not materially impact the Undertakings.

5.3 BT described the scope of its internal process for addressing the regular audit of user access controls required by the Variation, stating that BT's internal audit group will audit the ongoing application of user access controls and line management measures for ensuring they are maintained. This audit is not expected to take place more than once a year. The audit is over and beyond ongoing business review and compliance measures.

5.4 To address issues regarding the physical separation of Operational Support Systems used in the supply of services into Openreach from the rest of BT, where the supply boundary is currently unclear and may change, BT suggested the inclusion of an addition to clause 5.44.2 (the addition to the original clause is indicated below in italics). BT argued that this will enable it to respond flexibly if further changes prove necessary.

unless an alternative solution is agreed with Ofcom physically separate its Operational Support Systems such that these systems run physically separately for AS and the rest of BT by 30 June 2010

5.5 Further investigation of these issues with BT revealed concerns with this supply boundary and a related issue regarding the impact of the shared use of network assets on the physical separation of Operational Support Systems.⁷

C&W

5.6 C&W broadly welcomed the consultation given Ofcom's determination that it does not materially affect the Undertakings or the June 2010 obligation for physical separation. C&W added that it believed the milestones set out in the Variation provide greater transparency of BT's process for meeting its Undertakings obligations with regard to full physical separation.

5.7 C&W commented that progress towards separation is already in evidence with the ongoing implementation of Openreach's Equivalence Management Platform ('EMP') – Openreach's Operational Support System that operates on an EOI basis for all

⁶ The responses, in full, are available at http://www.ofcom.org.uk/consult/condocs/bt_oss/responses/

⁷ A full explanation of the issues relating to BT's request and Ofcom's approach are laid out in paragraphs 5.19 to 5.26.

CPs. However, C&W expressed concern that the Variation did not include a “fit for purpose” milestone for the EMP and should do so.

- 5.8 Ofcom acknowledges C&W comments regarding the implementation of Openreach’s EMP. It is our view that the scope of the Variation is to address BT Operational Support Systems separation as a whole rather, than specific platform implementations. Therefore, we feel the inclusion of such a milestone would be at odds with this scope. Ofcom and the Office of the Telecommunication Adjudicator have a broad and on-going programme of engagement with Openreach regarding the implementation and performance of Openreach’s EMP.
- 5.9 C&W welcomed the removal of the term “logically separate” from the original Undertakings, but expressed concern that this constituted the removal of the June 2007 obligations in respect of protection against non-price discrimination.
- 5.10 Ofcom is of the view that the removal of the term “logically separate” does not in any way alter BT’s obligations with regard to non-price discrimination. The implementation of stringent user access controls provides protection against non-price discrimination and the effectiveness of user access controls will be backed up with an on-going audit programme⁸.
- 5.11 C&W sought assurances that Ofcom have a program of engagement for reviewing progress against the roadmap and the milestones in the Variation, and an indication of the measures available to Ofcom should BT fail to meet its commitments in respect of the Variation.
- 5.12 Ofcom’s ongoing programme of engagement with BT for reviewing progress against the milestones is laid out in the Next Steps section of this Statement. A failure to meet a binding milestone would represent a breach of the relevant Undertakings. Ofcom has recourse to act in accordance with its powers under the Enterprise Act to address such a breach.

CPW

- 5.13 CPW did not think it appropriate to vary the Undertakings as proposed, stating that it relaxes the obligations on BT and undermines the effectiveness of the Undertakings. In CPW’s view, this sends the wrong message to CPs reliant on Ofcom to enforce the Undertakings. CPW went on to express concern that this is an example of Ofcom giving way to BT, where BT has failed to take necessary plans and investment to comply with the Undertakings.
- 5.14 It is Ofcom’s view that the objectives of the Variation are to strengthen the effectiveness of the Undertakings with the incorporation of legally binding milestones backed by a programme of ongoing engagement with BT to monitor progress against these milestones. Progress against the milestones will be reviewed as appropriate and include the delivery to Ofcom of a formal progress report for each review period. This review will identify concerns at the earliest opportunity and ensure corrective action is implemented quickly and effectively. Ofcom will pursue any areas of concern with BT to ensure the programme remains on course.
- 5.15 CPW did not agree that user access controls could be as effective as logical separation and as such were of the view that the proposal weakens the Undertakings. CPW added that if the proposed Variation goes ahead, BT’s

⁸ Full details of the audit programme are described in paragraphs 4.21.

implementation of user access controls should be audited on 1st July 2007 and the audit report published.

- 5.16 Ofcom has reviewed BT's implementation of user access controls and is satisfied that they provide effective interim protection against non-price discrimination. Ofcom agree with CPW's proposal that user access controls should be audited from 1st July 2007, the date on which the first obligation to apply user access controls comes into effect. To this end, Ofcom proposed to BT the inclusion of an additional internal audit as soon as practicable immediately following 30th June 2007, the date at which the first obligation for the application of user access controls comes into effect. BT agreed to this proposal. This audit is incorporated in the Variation in clause 5.44.5 (b). The audit is to be completed by 31st December 2007. The results of this audit will be shared with the EAB and Ofcom.

Scottish and Southern Energy (SSE) plc

- 5.17 SSE expressed support for the proposed Variation and found the consultation useful in clarifying BT's approach. SSE stated that as a vertically integrated and regulated company in the energy sector, subject to systems separation requirements by its regulator, it is comfortable with the approach taken by BT, adding that in its experience the user access controls proposed in the Variation are a workable solution.

Ofcom's conclusions

Requirement for immediate audit of user access controls

- 5.18 Having considered the responses, Ofcom shares CPW's view that an immediate audit of user access controls will reassure CPs of the effectiveness of user access controls as an interim measure against non-price discrimination. We have therefore agreed with BT a change to the Variation to include an additional internal audit to commence as soon as reasonably practicable after 30th June 2007, the date on which the first obligation to apply user access controls comes into effect, this audit is to be completed by 31st December 2007. The results of this audit will be reported to the EAB and shared with Ofcom.

Sub-clause requested by BT

- 5.19 In its response to Ofcom's consultation BT raised an issue regarding the separation of Operational Support Systems concerned with the supply of services into Openreach from BT Wholesale, where the supply boundary is currently under discussion. Changes to the boundary for the supply of BT Wholesale services into Openreach may mean that certain systems are no longer shared and therefore no longer need to be separated. However, where systems continue to be shared across the boundary, the requirement to physically separate them will still apply.
- 5.20 Further dialogue with BT revealed a related issue regarding the separation of Operational Support Systems tied to network assets - fibre and electronics - the use of which are shared between Openreach and BT Wholesale in the provision of optical fibre transmission services. Both Openreach and BT Wholesale utilise each others' services to provide a full service to their end customers. Physically separating the systems and processes where Openreach and BT Wholesale share the use of these network assets could result in fault correlation and management becoming more complex and taking longer; and this could result in delays in the restoration of service

to customers, many of which are large businesses with stringent availability requirements.

- 5.21 The issue is confined to optical fibre transmission services and affects fewer than 20 of around 6,000 BT systems, and only 30,000 of the 60 million customer service record instances that need to be separated. Work is still under way to develop a solution for these optical fibre transmission services and the management of the shared network assets. Detailed design work on implementing physical separation has been undertaken and solutions have already been designed for the vast majority of the systems and services.
- 5.22 Ofcom intends to work with BT to find a solution that achieves the objectives of physical separation without compromising the levels of service provided by the shared support systems that support the shared use of network assets by Openreach and BT Wholesale. This could include the separation of these network assets, the creation of separate inventories, and the separation of logical and physical network information. Ofcom is mindful that many of the customers who could suffer impact to their service are other CPs. Ofcom will ensure that the final agreed solution offers the best result for both achieving the aims of physical separation without taking undue risks with customer service.
- 5.23 Ofcom's conclusion is that additional flexibility in the implementation of physical separation may be required whilst we address the issues described above. Even though Ofcom and BT can under Section 18 of the Undertakings agree a variation, for transparency we have agreed a sub-clause - set out below - similar to that suggested by BT. It is envisaged that this sub-clause would be used in the following circumstances:
- For strategic reasons, where changes to the supply boundary between Openreach and BT Wholesale indicate a possible impact on the location of the border between physically separated systems, i.e. in circumstances where systems are no longer shared and therefore no longer need to be separated;
 - Where the shared use of network assets between Openreach and BT Wholesale in the provision of their respective optical fibre transmission services results in insurmountable problems for the physical separation of the specific Operational Support Systems which support these services; and
 - To address any unintended consequences of physical separation which are detrimental to consumers or the industry as a whole.
- 5.24 In all of the cases outlined above, where systems continue to be shared across the supply and network asset boundaries between Openreach and BT Wholesale, the requirement to physically separate them will still apply.
- 5.25 For the reasons laid out above, Ofcom has agreed with BT the addition of a sub-clause, such that clause 5.44.2 will now state:
- unless and insofar as an alternative solution is agreed with Ofcom physically separate its Operational Support Systems such that these systems run physically separately for AS and the rest of BT by 30 June 2010*
- 5.26 Physical separation of all Operational Support Systems shared between Openreach and the rest of BT by 30th June 2010 remains a requirement of the Undertakings. The inclusion of this sub-clause does not alter the obligation on BT to physically separate

its Operational Support Systems shared between Openreach and the rest of BT by 30th June 2010, or the nature of that separation.

The Undertaking as a comprehensive solution

- 5.27 It remains Ofcom's view that the Variation does not alter the Undertakings materially as they relate to a small part of the Undertakings, which deal with the interim measures for protection against non-price discrimination prior to full physical separation of Operational Support Systems, and as such do not effect the overall operation of the Undertakings in a material way.
- 5.28 Section 154 of the Enterprise Act requires that Ofcom should "have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the adverse effect on competition". Ofcom's competition concerns were set out in its Strategic Review of Telecommunications Stage 2 Consultation Document⁹ ('the Review'). In considering the case for varying the Undertakings, Ofcom must consider whether this solution is materially and negatively affected by the variation in question.
- 5.29 The importance of physical systems separation was reflected in the Undertakings and, until such physical separation for Operational Support Systems was achieved, an interim solution was included. Since then, BT has implemented a comprehensive review of its systems estate and developed a roadmap for the process to achieve physical separation of all Operational Support Systems shared between Openreach and the rest of BT by 30th June 2010.
- 5.30 As stated in paragraph 5.27, Ofcom does not consider the Variation to be material and therefore does not in anyway materially affect the comprehensive solution that the Undertakings represent. Furthermore Ofcom considers that the Variation will not have a negative impact on the comprehensive solution and in particular Equality of Access. In Ofcom's view the Variation will strengthen the effectiveness of the Undertakings in the long term: the binding interim milestones increase the transparency of BT's progress to achieving the key Equality of Access requirement of physical system separation. As such, they reduce the risk both to industry of missing the physical separation deadline and to consumers of disruption to the service experience. The user access controls backed by regular internal and independent external audit, provide protection against non-price discrimination in the interim, whilst the increased transparency also helps CPs prepare the process and systems changes they must make in order to work with BT's physically separated systems and supporting processes.
- 5.31 As a result, on 19th June 2007 Ofcom and BT signed the Variation to the Undertakings set out in Annex 1. This Variation came into immediate effect upon signing.

Summary of Variation milestones

- 5.32 The Variation to the Undertakings incorporates the milestones set out in Table 2 below. The user access controls will be the subject of an audit regime based on regular internal audits; an audit effective as soon as practicable from the date the first application of user access controls is due; and at least two external audits. The outcome of all audits will be reported to Ofcom and the EAB.

⁹ http://www.ofcom.org.uk/consult/condocs/telecoms_p2/tsrphase2/

Table 2: Binding milestones towards physical separation

User Access Controls	WLR Analogue, SMPF, MPF ¹⁰	WLR ISDN2 ⁵	WLR ISDN30 ⁵
	30 th June 2007	30 th Sept 2007	30 th Dec 2007
Ready to Mass Migrate	PSTN Customer-side	Featureline Customer-side	
	31 st March 2008	30 th June 2009	
Migration Progress	Customer-side		Supply-side
	50% migrated	90% migrated	50% migrated 90% migrated
	30 th Nov 2008	30 th Sept 2009	31 st May 2009 31 st Jan 2010
Physical Separation Complete	30 th June 2010		

¹⁰ Applicable to EOI products

Section 6

Impact assessment

The impact of the Variation

6.1 Ofcom's view is that overall, this Variation does not have a material impact on the Undertakings, and at the same time reduces the risk to consumers. In this section we set out why this is the case.

Impact on the Undertakings

6.2 The binding milestones set out in the Variation strengthen the effectiveness of the Undertakings in the long term: increasing the transparency of BT's progress to achieving the key Equality of Access requirement of physical system separation. As such, the milestones reduce both the risk to industry of BT missing the June 2010 physical separation deadline and the risk to consumers of service disruption. Additionally, this will help CPs to prepare the process and systems changes required to work with BT's physically separated systems and supporting processes.

6.3 The Variation describes how user access controls will be implemented during the period up to physical separation, and how they will be backed by regular internal and independent external audits. These measure help ensure that there is protection against non-price discrimination by BT until physical separation is achieved.

6.4 The Variation therefore gives greater confidence that the 30th June 2010 deadline for physical separation will be met and that there will be protection against non-price discrimination in the meantime. It does not change the deadline for physical separation nor the achievement of Equality of Access. Overall, in our view the Variation does not materially impact the comprehensive solution that the Undertakings represent.

Impact on consumers

6.5 Ofcom has a duty to promote the interests of consumers and citizens (where appropriate through competition) and in developing the Variation we have sought to ensure that the consumer interest is protected. The process of migrating over 60 million consumer data records to separate systems does represent a potential risk to continuity and quality of the consumer service experience. The Variation helps reduce this risk in two ways:

- The RTMM milestones indicate clear check points at which all operational resources should be ready to receive new customer data and support migrated customers. By reviewing the results of the migration ramp up test period, BT and Ofcom will be able to assess the risk in moving to mass migration.
- The ready to mass migrate and progress milestones are divided by customer and product groups, allowing problems to be more easily identified and isolated. Where there is a risk of substantial impact to the consumer experience the sub-clause agreed between Ofcom and BT and added to clause 5.44.2 may apply.¹¹

¹¹ Full details of this sub-clause and the reasons for its inclusion are given in paragraphs 5.19 to 5.26

Impact on BT

- 6.6 As BT implements physical separation it will redefine the relationship between Openreach and the rest of BT for all business and residential customers. This will contribute to the effective operational separation necessary to make Equality of Access a reality.
- 6.7 BT's implementation of physical systems separation is in line with its pre-Undertakings plans for the implementation of a separate service-oriented architecture for each business unit. This approach therefore minimises the incremental cost of systems separation, reducing the burden on BT.
- 6.8 The roadmap and associated milestones enable BT to monitor progress effectively internally, and ongoing review with Ofcom should encourage focus on the requirements of Equality of Access.
- 6.9 In addition, the roadmap reflects BT's approach to systems separation which, by its incremental nature, promotes stability of systems and should reduce the cost of implementation.

Impact on competitive providers

- 6.10 The milestones will help CPs prepare for the changes to BT systems and supporting processes with which they interface, which are a consequence of the physical separation of BT's Operational Support Systems. The Variation does not impose any additional costs on CPs as these changes would have occurred in any case but the milestones will give clear visibility around which they can plan. Where there are impacts on CPs from BT's separation plans, such as closure of shared gateways, BT will consult with CPs in advance in accordance with its existing obligations. In addition, there is some interdependency between the rate of migration of data to the new systems and the take up of EOI products by CPs.
- 6.11 Where there is a risk of substantial impact on CPs using Openreach or BT Wholesale products in the provision of their service, the sub-clause added to clause 5.44.2 agreed between Ofcom and BT may apply.

Risk management

Disruption to customer service

- 6.12 BT currently relies on shared access to applications and data to enable the flow of information between the various steps of their business processes. This has allowed a high degree of automation particularly around the legacy products such as PSTN. These processes have been developed and refined over many years and are ingrained within the organisation and the people involved in delivering them. Physical separation will require up to three sets of system users and systems to co-operate and communicate across electronic gateways to achieve the same process steps. Users will not be able to access shared data to "fix" a stage in a process as they may have in the past.
- 6.13 The potential risks to customer service during separation are significant and in the development of the roadmap these risks have been comprehensively analysed by BT. The risks identified are set out in the roadmap together with mitigation actions to address and manage each risk. Ofcom will work with the EAB to ensure that these risks are appropriately monitored.

Enforcement of access controls

- 6.14 The enforcement and effectiveness of user access controls, as an interim solution in protecting against non-price discrimination, will be verified through a regime of internal and independent external audits reporting to Ofcom and the EAB.¹²

Failure to deliver to the roadmap

- 6.15 There is a risk given the scale and complexity of the project that BT fails to keep to the plan and misses the required deadlines. This risk has been mitigated by having some small contingency within the plan to allow for unforeseen delays; appointing senior project leads who have the necessary experience to manage complex and large scale projects; and regular progress reviews including those with Ofcom, as described in section 7.5. These measures will ensure any potential delays are picked up at an early stage and corrective action taken to maintain the timeline defined by the roadmap.

¹² Full details are provided in paragraphs 4.21 and 5.18

Section 7

Next Steps

- 7.1 Ofcom has already worked closely with BT during the development of the roadmap for physical separation. Ofcom is satisfied that the commitments made in the Undertakings are underpinned by formal estimation and plans; and have been agreed by all those key managers involved in delivering the milestones defined in the Variation.
- 7.2 Ofcom will continue to work with BT in five areas:
- 1) Review of the detailed plans for the physical separation of Operational Support Systems;
 - 2) Review of the customer service experience;
 - 3) Progress reviews against the milestones in the Roadmap;
 - 4) Implementation and audit of user access controls; and
 - 5) Identification and resolution of issues resulting from the shared use of optical fibre transmission network assets between Openreach and BT Wholesale.

Detailed plans

- 7.3 Ofcom will work with BT to ensure the top level plans in the roadmap are underpinned by detailed working level plans. Ofcom will work with BT to review the implementation of systems separation against these plans.

Customer Service Experience

- 7.4 Implementation of physical separation will present a risk to customer service. Ofcom will work with BT to check that the approach adopted by BT provides comprehensive protection of customer service, through testing, piloting, contingency plans and service level monitoring. Ofcom will ensure that time pressures do not lead to any compromise on these measures.

Progress Reviews

- 7.5 Whilst BT is responsible for ensuring that they meet their plans and commitments, Ofcom will meet on a regular basis to review progress with BT. BT will produce a formal progress report for each progress review. The intention of these reviews is to ensure that any concerns over progress are identified at the earliest opportunity and that corrective action is implemented quickly and effectively so that the programme continues to meet the committed separation timetable. Ofcom will pursue any areas of concern identified by these progress reviews. Ofcom will ensure that the issues are properly understood and the nature and scale of the corrective action will keep the programme to the agreed timetable. Ofcom will publish summaries of these reviews as appropriate.

Implementation of user access controls

- 7.6 Ofcom has agreed with BT strengthened user access controls to ensure that there is adequate protection against non-price discrimination during the implementation of physical separation. Ofcom is satisfied that the proposed method of implementing user access controls will provide the necessary protection. However, it is important that these controls are properly and fully implemented. The implementation will be audited by both an internal BT audit team and by independent external auditors. Ofcom will ensure these audits are carried out and will ensure that any concerns or issues raised by the audit teams are addressed by BT.

Optical Fibre Transmission Shared Assets

- 7.7 Ofcom will review with BT the small number of systems (currently thought to be less than 20) affected by the shared use of network assets in the provision of optical fibre transmission services and agree in each case the most appropriate solution that achieves the objectives of physical separation whilst protecting the consumer experience.

Annex 1**Variation Document**

Variation of Undertakings given to Ofcom by BT pursuant to the Enterprise Act 2002

Variation number: 9

WHEREAS:

- (a) British Telecommunications plc ('BT') has given Ofcom certain undertakings ('the Undertakings') which took effect on 22 September 2005, pursuant to the Enterprise Act 2002;
- (b) By virtue of section 18.1 of the Undertakings, BT and Ofcom may from time to time vary and amend the Undertakings by mutual agreement; and
- (c) BT and Ofcom have agreed to vary the Undertakings as hereinafter appears.

NOW THEREFORE:

It is hereby agreed between BT and Ofcom pursuant to section 18.1 of the Undertakings that the Undertakings are varied as follows:-

1. Definitions and interpretation

- 1.1 Words or expressions hereinafter appearing have the same meanings as in the Undertakings.
- 1.2 References hereinafter to section numbers are references to section numbers in the Undertakings.
- 1.3 Section 2.1 of the Undertakings (Definitions and Interpretation) is amended to include the following definitions:-

"Customer Service Record" means the set of data which is required to provide a customer with a product or service instance.

"Customer Side Record" means a Customer Service Record relating to BT as a purchaser from AS.

"Featureline" means the products offered by the Downstream Divisions at 31 March 2007 under the names Featureline, Featureline Compact and Featureline Corporate/Embark and as they may evolve, be developed or replaced (whether under the aforementioned or a new name) from time to time.

"Measured Products" means Wholesale Analogue Line Rental, Wholesale ISDN2 Line Rental, Wholesale ISDN30 Line Rental, Metallic Path Facility, Shared Metallic Path Facility, Wholesale Extension Service, Backhaul Extension Service, Wholesale Extension

Service Backhaul Product, Wholesale Extension Service Access Product and Wholesale End-to-End Ethernet Service as at 31 March 2007.

- “Ready to Mass Migrate” means that procedures and processes necessary to enable commencement of the migration of large volumes of Customer Service Records from Operational Support Systems shared between AS and the rest of BT to Operational Support Systems, which are physically separate for AS and the rest of BT, have been completed and such migration of large volumes has commenced. This includes, *inter alia*, the conclusion of the re-engineering of end-to-end processes and the completion of pilot migrations of varying volume. For the avoidance of doubt, once BT is Ready to Mass Migrate the volume of migrations going forward might fluctuate.
- “Residential Customer” means any natural person who uses or requests a public electronic communications service for purposes which are outside his or her trade, business or profession.
- “Supply Side Record” means a Customer Service Record relating to BT Wholesale in its role as supplier to AS.
- “User Access Control” means the application of user profiles and/or data tagging or authorisation control mechanisms combined with behavioural mechanisms such that users outside AS can only have access to systems or applications or data which is consistent with the Undertakings and which does not lead to undue discrimination against other Communications Providers.

2. Governance of Access Service

2.1 Section 5.44 is deleted and replaced in its entirety by the following new section 5.44:-

5.44 BT shall:

- 5.44.1 ensure that all its Operational Support Systems designed for AS are designed on the principle of separation from the rest of BT systems;
- 5.44.2 unless and insofar as an alternative solution is agreed with Ofcom physically separate its Operational Support Systems such that these systems are run physically separately for AS and the rest of BT by 30 June 2010;
- 5.44.3 in the period before the completion of physical separation of Operational Support Systems referred to in section 5.44.2, unless otherwise agreed between BT and Ofcom:-
- (a) implement User Access Controls for Operational Support Systems capability to the extent it supports the Equivalence of Inputs products of Wholesale Analogue Line Rental, Shared Metallic Path Facility and Metallic Path Facility by 30 June 2007, the Equivalence of Inputs product of Wholesale ISDN2 Line Rental by 30 September 2007 and the

- Equivalence of Inputs product of Wholesale ISDN30 Line Rental 31 December 2007;
- (b) ensure that it is Ready to Mass Migrate Customer Side Records where those records relate to the consumption by Residential Customers of PSTN voice telephony products by 31 March 2008;
 - (c) ensure that it is Ready to Mass Migrate Customer Side Records where those records relate to Featureline by 30th June 2009;
 - (d) ensure that 50% of all Customer Side Records relating to the Measured Products held on Operational Support Systems shared between AS and the rest of BT are migrated to physically separate Operational Support Systems by 30 November 2008;
 - (e) ensure that 50% of all Supply Side Records relating to the Measured Products held on Operational Support Systems shared between AS and the rest of BT are migrated to physically separate Operational Support Systems by 31 May 2009;
 - (f) ensure that 90% of all Customer Side Records relating to the Measured Products held on Operational Support Systems shared between AS and the rest of BT are migrated to physically separate Operational Support Systems by 30 September 2009; and
 - (g) ensure that 90% of all Supply Side Records relating to the Measured Products held on Operational Support Systems shared between AS and the rest of BT are migrated to physically separate Operational Support Systems by 31 January 2010;
 - (h) in calculating the percentages in section 5.44.3 (d) to (g), include those Customer Side Records and Supply Side Records already separated since 30 June 2006;
- 5.44.4 review on a regular basis with Ofcom achievement on a roadmap for the separation referred to in sections 5.44.1, and 5.44.2; and
- 5.44.5 ensure that the implementation and ongoing application of the User Access Control requirement referred to in section 5.44.3 (a) is:-
- (a) subject to regular audits by BT's internal audit group;
 - (b) subject to an audit commissioned by the EAB (in the exercise of its function under 10.9) in relation to User Access Controls for Operational Support Systems capability to the extent it supports the Equivalence of Inputs products of Wholesale Analogue Line Rental, Shared Metallic Path Facility and Metallic Path Facility; such audit to commence as soon as reasonably practicable after 30 June 2007 and to be completed including having the outcome agreed by the EAB by 31 December 2007 unless otherwise agreed with Ofcom and the outcome of such audit to be shared with Ofcom in writing no later than 15 working days after its completion;
 - (c) subject to an independent, external audit focussing on risk assessment, solution design, implementation assessment and ongoing controls to be completed by 30 June 2008; and
 - (d) subject to an additional independent, external audit in the period between the completion of the audit referred to in 5.44.5 (c) and 30 June 2010 focussing on the ongoing application of User Access Controls.

3. Effect

This variation of the Undertakings takes effect immediately upon signature hereof on behalf of both parties.

Signed for and on behalf of British Telecommunications plc

Signature _____

Name _____

Position _____

Date _____

Signed for and on behalf of Ofcom

Signature _____

Name _____

Position _____

Date _____