

Switching Models:

An Updated Cost Assessment of Options

Final

Prepared for:



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27 June 2013

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Table of Contents

1.	Executive Summary	5
	Introduction	5
	Section I	6
	Background	6
	Objectives	8
	Key Findings	9
	Section II	12
	Background	12
	Objectives	12
	Key Findings	13
2.	Project Approach	15
	Section I	15
	Section II	16
SEC	TION I: EVALUATION OF SWITCHING MODELS	17
3.	The Proposed Switching Models	17
	Mandating of Sim Provide functionality	17
	Enhanced NoT (Harmonised)	
	Enhanced Not & MAC (Unharmonised)	20
	GPL-TxC Virtual	22
	Back-End Processes	25
4.	Cost Methodology	26
	Overview	26
	Key Cost Modelling Principles	26
	Estimating CP Costs	27
	Calculating the Total Costs to Industry	28
	Unknown Costs	29
5.	Switching Model Analysis Results	30
	Set-up Costs	
	Ongoing Costs	31
	Net Present Cost Analysis	32



	Impact to Wholesale Providers and BT Openreach	
6.	Record of Consent	35
	Introduction and Methodology	35
	Results	35
7.	Switching Erroneous Transfers	
	Introduction and Methodology	
	Results	
8.	WLT Erroneous Transfers	46
	Introduction and Methodology	46
	Results	46
9.	Conclusions	56
SEC	TION II: EVALUATION OF PHASED MIGRATION TO NEW SWITCHING MODEL	58
10.	Introduction and Methodology	58
11.	Detailed E-NoT Cost Analysis	60
12.	Cost Wastage Analysis	63
13.	NoT+ (Model Description and Costs)	65
	NoT+ Detailed Costs	68
14.	Conclusions	70
15.	ANNEX 1: Switching Model Cost Breakdown	71
	GPL-TxC Model	71
	GPL-TxC Virtual Model	71
	Enhanced NoT (Harmonised) Model	72
	Enhanced NoT & MAC (Unharmonised) Model	73
16.	ANNEX 2: Switching Model Assumptions Tables	75
17.	ANNEX 3: Other Assumptions	81
18.	ANNEX 4: Detailed Assumptions Table for Individual E-NoT Enhancements	83
19.	ANNEX 5: Enhanced MAC	84
	Introduction	
	Model Specification	
	Model Results	86
	Cost Breakdown	
20.	ANNEX 6: MPF – MPF Migrate	90



21.	ANNEX 7: Glossary of Abbreviations	.91
Con	tact Details	.92



1. EXECUTIVE SUMMARY

Introduction

- 1.1. This report presents two engagements of work conducted by CSMG for Ofcom between 2012 and 2013, detailed respectively in Section I and Section II of this report. Both engagements are part of a larger review of switching processes in the UK communications sector conducted by Ofcom.
- 1.2. In the first engagement, detailed in Section I, Ofcom engaged CSMG to create specification documents and implementation cost assessments for the further development of consumer switching options), including an enhanced NoT model (harmonised to the NoT switching process), an enhanced NoT and MAC model (not harmonised across switching processes) and a hub and distributed database model called GPL-TxC-V (harmonised to a GPL switching process). CSMG presented cost analysis for transitioning to each of these new switching models over a 10 year time frame.
- 1.3. In addition, in Section I, CSMG developed cost estimates for enhancements to obtaining a Record of Consent from the consumer, and for solution(s) to mitigate Erroneous Transfers during switches or Working Line Takeovers. At the conclusion of Section I, CSMG provided Ofcom with the costs for each of these switching models and a set of accompanying specification documents.
- 1.4. Following analysis of the results of the first engagement, Ofcom re-engaged CSMG to provide detailed cost analyses for individual elements of the Enhanced NoT (harmonised) model and to assess the extent of cost wastage for each of the specified E-NoT elements in the event of a transition from a harmonised NoT model to a database model such as GPL-TxC.
- 1.5. Ofcom used these estimates to inform analysis of each of the elements of E-NoT, and to determine which of them should be included in a new switching model, NoT+, with an aim to delivering benefits quickly to consumers while minimizing potential wasted costs to industry in the event of subsequent changes. At Ofcom's request, CSMG then developed a detailed specification documents and cost estimates for the new NoT+ model. This second engagement is described in Section II.
- 1.6. The following Executive Summary and report is thus divided by the two sections, presenting details and results aligning with the two engagements described above.





Section I

Background

- 1.7. In September 2010, Ofcom, the UK communications regulator, published a consultation document reviewing switching processes in the UK communications sector. The aim of the review was to identify the key issues and problems with the current switching processes. Ofcom's overall objective was to ensure that switching processes deliver positive consumer and good competition outcomes for single and bundled services.
- 1.8. Following this consultation, Ofcom set up a Switching Working Group (SWG) with the Office of the Telecommunications Adjudicator (OTA) and industry stakeholders in order to discuss and assess potential switching options for fixed line voice and broadband services on Openreach copper loops. The SWG developed three models for consideration: two Gaining Provider Led (GPL) models and one Losing Provider Led (LPL) model. The models were:
 - 1. "USN" A GPL model which utilised a Unique Service Number (USN) which would be provided to customers on their bill, and which would assist providers in identifying the service to be switched and in authenticating the customer;
 - 2. "TPV" A GPL model which utilised a Third Party Validation (TPV) provider to record a customer's consent to switching of the service; and,
 - 3. "LPL" A LPL model where a customer would contact their current provider first in order to request a code which they could then provide to their new provider to begin the switching process. From a customer-facing perspective, this would be similar to today's MAC process utilised in broadband switching.
- 1.9. Each of these models would be supported by a new back-end process, the "TxC mechanism", which would help ensure the correct assets were switched.
- 1.10. In 2011, CSMG was engaged by Ofcom to create specification documents and cost assessments for these consumer switching options.
- 1.11. A further model, GPL-TxC, was included in the 2011 report. GPL-TxC is a harmonised GPL model, based on the TxC mechanism, in which a central "Hub" coordinates the parties (principally the GP and LP) during a switch. It is the same as the TPV model but without the TPV element.
- 1.12. The CSMG deliverables examined the expected impacts on industry as input to the evaluation of the selected options. CSMG's cost assessments and specifications were published alongside Ofcom's consultation document, "Consumer switching a consultation on proposals to change the processes for switching fixed voice and broadband providers on the Openreach copper network" in February 2012. In the February consultation document, Ofcom consulted on a number of options including some which were not developed as part of SWG.
- 1.13. In November 2012, Ofcom engaged CSMG to create specification documents and cost assessments for the further development of consumer switching options, and to conduct further analyses concerning the capture of consumer consent, and the potential options





and associated costs of solutions to Erroneous Transfers¹, during switching, and during the Working Line Takeover² process. The three switching model options CSMG were asked to consider were:³

- 1. A GPL-TxC option but with a 'virtual' rather than a physical database, GPL-TxC-V.
- 2. Two incremental models, as specified in the Consultation, but with Sim Provide functionality mandated for all migration types:
 - i. An Enhanced NoT (harmonised) option; and
 - ii. An Enhanced NoT and MAC (un-harmonised) option.
- 1.14. Section I of this report assesses and compares the cost and impact on industry of transitioning to each of the above three models for fixed voice and broadband.
- 1.15. For comparability, the costs of the LPL-TxC and GPL-TxC models assessed in the February consultation are also included.
- 1.16. The switching model costs published in this report are related to the costs in CSMG's response to the PWC report "Ofcom customer switching consultation: An independent cost assessment of the alternative GPL TPV model".⁴ CSMG's response to the PWC report is published alongside this document.
- 1.17. CSMG has updated some of the inputs to its cost assessment based on PwC's comments. Where PwC's comments were judged to be valid, calculations of the costs of the TxC models (LPL-TxC, GPL-TxC, and the new GPL-TxC-V⁵) have been amended accordingly.
- 1.18. Note, however, that the costs for the GPL-TxC and LPL-TxC models are different in this report to those given in the CSMG response to PWC. The analysis in CSMG's response to the PWC report is based around an annual number of 2.1 million switches. Since then, updated data have indicated that there are approximately 2.7m switches per year. The analysis in this report is based on the updated figure of 2.7m.
- 1.19. Increasing the number of switches causes an increase in the LPL-TxC costs, and a decrease in the GPL-TxC costs. A GPL harmonisation approach reduces the total cost associated with the CSA speaking with an end user, because those end users no longer need to talk to their losing provider to obtain a MAC for broadband switches. Conversely, in LPL-TxC, all users which were switching voice services must now have an extra conversation with the losing provider to initiate a switch. Thus there is a positive variable cost of harmonised LPL models and a negative variable cost of harmonised GPL models, and increasing the number of switches increases these cost delta for both models.

⁵ GPL-TxC-V is a variant of the standard GPL-TxC model where customer information is held in a distributed database. A detailed explanation of GPL-TxC-V is provided in Section 3.36.



¹ An Erroneous Transfer is the process of switching a consumer from one provider to another in error because the wrong line has been identified.

² Working Lane Takeover (WLT) is the process by which an end user moving into a property (the inbound end-user) can take over the line of the end user moving out of the property (the incumbent end-user). The process allows for service to be switched on the day of the move. WLT is an NoT process.

³ Ofcom also requested that CSMG developed specifications and costs for an Enhanced MAC (Harmonised) model. This model is discussed further in Annex 6.

⁴ http://stakeholders.ofcom.org.uk/binaries/consultations/switching-fixed-voice-broadband/responses/PwC.pdf

Objectives

- 1.20. The objectives of this engagement were, firstly, to document specifications for the basic switching models and to calculate the incremental costs to industry of each model.
- 1.21. Secondly, to specify and cost a set of enhancements to the basic switching models to ensure validation of consumer consent when switching.
- 1.22. Thirdly, concerning Erroneous Transfers during switching:
 - 1. To analyse the causes of Erroneous Transfers during switching;
 - 2. To propose and specify a set of solutions to these causes;
 - 3. To recommend a set of solutions for each basic switching model; and
 - 4. To estimate the costs of the recommended solutions in the proposed switching models.
- 1.23. Fourthly, in a similar manner to Erroneous Transfers during switching, to examine the Working Line Takeover (WLT) process, to suggest improvements to reduce the incidence of Erroneous Transfers during WLT, to recommend solutions for each model where necessary, and to assess the costs of those solutions.
- 1.24. These four objectives are documented in the first part of this report, Section I.
- 1.25. The scope of this study covers processes related to switching of fixed line services (voice and broadband) on Openreach copper loops.
- 1.26. The total costs to industry are presented on a net present value basis over a 5 and 10 year timeframe. The costs are discounted using the social rate of time preference of 3.5% in real terms (published by HM Treasury⁶).
- 1.27. The cost estimates for each of the switching models inform Ofcom's assessment. CSMG was not instructed with assessing the overall benefits of the switching models, although we did assess to what extent each switching model was able to reduce the occurrence of erroneous transfers during switching and WLT.



⁶ See <u>http://www.hm-treasury.gov.uk/d/green_book_complete.pdf</u>, p98.

Key Findings

1.28. Costs for the switching model options, Record of Consent measures, and ET analyses are summarised in the following table. The costs of all of these measures under any one model are given in the "Total" line. Unknown costs are indicated by a letter, "+ A", and are discussed in further detail later in this report.

Figure 1: 10 Year NPC of Basic Switching Models, Record of Consent, Switching ET solutions, WLT ET solutions, and Total NPC (£m)

<u>10 Year NPC</u>	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
Basic Switching Model Option	£40m	£43m	£75m	£19m	£18m
Record of Consent	£9m	£9m	n/a	£9m	£9m
Cost to Address Switching ETs	£0m	£0m	£0m	£3m + A	£3m + A
Cost to Address WLT ETs	£3m	£3m	n/a	£7m	£7m
Total Cost of Switching Model	£52m	£55m	£75m	£38m + A	£37m + A

- 1.29. The cost assessment results in the above table are discussed in turn for:
 - 1. The basic switching models
 - 2. Record of Consent measures
 - 3. Solutions to ETs during switching (Switching ETs)
 - 4. Solutions to ETs during WLT (WLT ETs)
- 1.30. Beginning with the basic switching model costs: The switching model representing the greatest overall cost to industry on an NPC basis is the LPL-TxC model. Costs are driven largely by the LPL harmonisation effect; that is the new ongoing costs of customers having to make calls to the Losing Provider to obtain a TxC for voice and bundled service switches.
- 1.31. The second most expensive model is GPL-TxC-V. The high cost in this model, as in GPL-TxC, results from significant industry effort to design and implement the TxC mechanism, to set up a centralised Hub to coordinate switching, and from an ongoing requirement on CPs to securely and robustly expose key customer data to a centralised Hub. However, this model benefits from the GPL harmonisation effect (that is, the removal of customer calls to obtain a MAC).
- 1.32. The next most expensive model is the GPL-TxC model with a centralised database. It is similar to GPL-TxC-V, but requires less complex interfaces between the Hub and CPs, and is thus slightly less expensive.
- 1.33. The Enhanced NoT model (see paragraph 3.12) is the second least expensive switching model. Despite the significant costs of removing the MAC from existing system, and various other enhancements, the GPL harmonisation effect results in a low NPC.
- 1.34. Finally, the Unharmonised model is the least expensive switching model, benefitting from a reduction in call centre cost from shorter MAC calls on the dedicated MAC line, and



requiring the least effort in updating current systems and processes. The overall level of cost is similar to E-NoT.

- 1.35. The cost of ensuring CPs record consent during a sale was calculated using the same NPC methodology, and is given on a standalone basis (i.e. not included in the basic switching model costs). Record of Consent measures, including call recording for telesales, written records for retail/shop and doorstep selling, and capture of information during an online order, would create a 10 year net present cost of £9m, equal to an annualised cost of 5 pence per customer.
- 1.36. Analysis of Switching and WLT Erroneous Transfers against the new switching models revealed that no further investment was necessary for the LPL-TxC, but that a range of investment would be required for all of the remaining models.
- 1.37. With regards to protecting against Switching ETs, GPL-TxC and GPL-TxC-V do not require any further investment, but the E-NoT and E-NoT & MAC (U), would each benefit from a small investment of £3m on a 10 Year NPC basis.
- 1.38. The E-NoT and E-NoT & MAC (U) models would require additional investment to limit Switching ETs. The recommended course of action is that Openreach and retail CPs collaborate in retrospectively cleaning the Openreach database of address data "pollution", and in modifying current processes to prevent this pollution being introduced in the future.
- 1.39. Unfortunately it was not possible to estimate the cost for the Openreach database cleanup. The unknown cost, therefore, is indicated with a "+ A" under the E-NoT and E-NoT & MAC (U) models. Further details and explanation are given in Section 7, "Switching Erroneous Transfers".
- 1.40. The WLT ET analysis assumes the solutions recommended to address Switching ETs have been made for each model. Analysis of WLT Erroneous Transfers against the new switching models revealed a range of further investment would be needed to reduce or mitigate the occurrence of erroneous transfers during WLT.
- 1.41. The GPL-TxC and GPL-TxC-V models would benefit from a further enhancement: "Mandate communication to the incumbent end-user via notification letters". This would provide additional protection against WLT ETs. Further explanation is given in Section 8, "WLT Erroneous Transfers".
- 1.42. Assuming the recommended solutions to address Switching ETs have been implemented, the E-NoT and E-NoT & MAC (U) models would still benefit from further investment to reduce the occurrence of WLT ETs.
- 1.43. No further investment has been recommended for the LPL-TxC model. Unlike with Switching ETs, this is not because this model inherently reduces WLT ETs. Rather, the LPL-TxC model is fundamentally unable to cope with WLT. If WLT were to be made an LPL process, there would be a significant reduction in consumer efficiency in the existing WLT process, due to customers having to obtain a TxC or a MAC from the outgoing end user before moving in to the property.



- 1.44. Hence CSMG recommended that the WLT process is left unchanged in the LPL-TxC model (i.e. a GPL process), meaning that there is no further investment, but no further benefit from the reliability of the WLT process today. See Section 8 for further details and explanation.
- 1.45. The final and total costs for each model can thus be estimated, considering the basic model costs, Record of Consent, Switching ETs and WLT ETs together. Note that Record of Consent is only required in GPL models, and hence an "n/a" is shown against LPL-TxC.
- 1.46. With all costs included, and given the scale of potential unknown costs, the least expensive model is estimated to be GPL-TxC. This model is also the second best model for reducing Switching ETs (after LPL-TxC), and the best model for reducing WLT ETs.



Section II

Background

- 1.47. In 2013, Ofcom re-engaged CSMG to conduct further detailed analysis on the E-NoT model, with a view to evaluating the potential for industry to deploy a harmonised NoT model for a shorter timeframe. Such a model could potentially convey more immediate benefits to consumers at a proportionate cost to industry. CSMG was also requested by Ofcom to develop costs and specifications for this interim model.
- 1.48. Specifically, CSMG was engaged to:
 - 1. Conduct a detailed cost analysis of the individual components that make up E-NoT. For the sake of clarity, "E-NoT" includes the E-NoT basic model, Record of Consent, solution(s) to Switching ETs, and solution(s) to WLT ET(s);
 - 2. Evaluate the level of cost wastage for each of the components of E-NoT in relation to a transition from a harmonised NoT model to a database model such as GPL-TxC, and where cost wastage is expected, provide a 2 and3 year NPC for the E-NoT component; and
 - 3. Based on the outputs of 1. and 2., from which Ofcom identified the interim model NoT+, provide detailed specifications and costs for this new model.
- 1.49. Section II of this report provides details of the specification and costing work CSMG completed as part of the second engagement.
- 1.50. CSMG initially provided Ofcom with detailed cost assessments for delivering a series of E-NoT enhancements in a 10 year time frame. In addition, CSMG conducted a wasted cost assessment for each E-NoT enhancement, providing estimations of the wasted cost that could be incurred in a subsequent transition to a database model such as GPL-TxC.
- 1.51. After review of the results of CSMG's cost assessment, and consideration of cost impacts on industry given expected level of consumer benefit, Ofcom identified a sub-set of elements for E-NoT and grouped them into a new model, which it called NoT+.
- 1.52. Lastly, Ofcom requested that CSMG provided detailed specifications and cost analysis for the new NoT+ switching model.

Objectives

- 1.53. The objectives of this engagement were, firstly, to calculate detailed incremental costs to industry of individual enhancements to E-NoT.
- 1.54. Secondly, to assess which E-NoT enhancements could be wasted in a transition from an interim harmonised NoT model to a database model such as GPL-TxC, and to calculate the wasted costs to industry that would result if this transition were to take place.
- 1.55. Thirdly, for Ofcom to determine a new harmonised NoT switching model based on the results of CSMG's analysis and its own consideration of consumer benefits.
- 1.56. Fourthly, for CSMG to document specifications and calculate incremental costs to industry of the harmonised NoT model ("NoT+") as identified by Ofcom.





Key Findings

1.57. Costs for the initial review of E-NoT, including the basic E-NoT model, Record of Consent measures, and ET analyses are summarised in the following table. The 10 year NPC for each of these measures is given in the "Modular Costs" column. Cost Wastage estimates are presented next to the modular costs in 2 and 3 year NPCs. Unknown costs are indicated by the letter "A", and are discussed in further detail in later paragraphs.

		Modular Costs	Cost Wastage Estimates		
<u>Category</u>	E-NoT Cost Component	10 Year NPC	% Wasted Cost	2 Year NPC	3 Year NPC
	Harmonization of GPL by removing the LPL MAC switching process	£3.7m	20%	£1.9m	£1.7m
	Provision of better information on the implications of switching	£1.8m	0%	£0.0m	£0.0m
	Mandate Sim Provide functionality	£3.7m	20%	£0.4m	£0.4m
Basic E-NoT	Ensuring MPF CLI visibility	£4.1m	100%	£2.2m	£2.4m
	Mandate use of the Cancel Other process (Voice)	£0.5m	100%	£0.3m	£0.3m
	Mandate use of the Cancel Other process (Broadband)	£4.8m	100%	£2.5m	£2.8m
	Total Basic E-NoT	£18.7m	42%	£7.2m	£7.7m
Record of Consent	Record of consent to protect against slamming	£9.2m	0%	£0.0m	£0.0m
	Openreach database clean-up	А	Unknown	N/A	N/A
Solutions to Switching ETs	Mandate CPs only place a NoT order where there is an exact match	£3.2m	100%	£1.6m	£1.9m
	Total Cost to Address Switching ETs	£3.2m + A	100%	£1.6m + A	£1.9m + A
	Mandate communications to the incumbent end- user via notification letters	£3.5m	0%	£0.0m	£0.0m
Solutions to WLT ETs	Mandate CPs only place a WLT order where there is an exact match	£3.2m	100%	£1.6m	£1.9m
	Total Cost to Address WLT ETs	£6.6m	60%	£1.6m	£1.9m
E-NoT	Basic E-NoT + Record of Consent + Solution(s) to Switching ETs & WLT ETs	£37.7m + A	39%	£10.5m + A	£11.4m + A

Figure 2: 10 Year NPC of E-NoT and Wasted Cost Analysis (£m)



- 1.58. The E-NoT enhancement representing the greatest cost to industry varies from an implementation and wasted cost perspective.
- 1.59. On a 10 year implementation outlook, the largest E-NoT cost driver is Record of Consent to protect against slamming. This cost includes call recordings for telesales, written records for retail/shop and doorstep selling, and capture of information during an online order. Taken in aggregate, these create a 10 year net present cost of £9m.
- 1.60. For the basic E-NoT switching model, implementation costs are largely driven by mandating of Cancel Other and by the LPL harmonisation effect. Both require significant costs to deploy changes to internal systems and processes.
- 1.61. The largest wasted cost is mandating the use of Cancel Other process, which is 100% wasted in a subsequent transition to a database model.
- 1.62. Harmonisation to GPL also drives significant cost wastage, primarily as a result of testing costs requiring collaboration across multiple CPs and industry bodies such as Openreach. In a subsequent migration to a variant of GPL-TxC, costs incurred for testing during the implementation of the previous model would be 100% wasted.
- 1.63. By drawing on this cost analysis, Ofcom determined a new switching model, NoT+, which would deliver benefits to consumers quickly while minimising cost to industry, and in particular while minimizing wasted cost to industry in the event of a subsequent change to a database model. Detailed cost analysis for NoT+ is given in the following table.

<u>Category</u>	<u>E-NoT Element</u>	2 Year NPC	3 Year NPC	10 Year NPC
	Harmonisation of GPL by removing the LPL MAC switching process	£9.5m	£8.7m	£3.7m
Basic NoT+	Provision of better information on the implications of switching	£1.0m	£1.1m	£1.8m
	Mandate Sim Provide functionality	£1.9m	£2.2m	£3.7m
Record of Consent	Record of consent to protect against slamming	£5.3m	£5.8m	£9.2m
Solutions to	Mandate communication to the incumbent end-user via notification letters	£1.1m	£1.4m	£3.5m
WLIEIS	Mandate CPs only place an order where there is an exact match	£1.6m	£1.9m	£3.2m
NoT+	NoT+ Total NoT+ Enhancements		£21.1m	£25.1m

Figure 3: 2 Year, 3 Year, and 10 Year NPC of NoT+ (£m)

1.64. The NPC for NoT+ is £20.4m on a two year basis, £21.1m on a three year basis, and £25.1m on a 10 year basis.





2. PROJECT APPROACH

2.1. As previously discussed in the executive summary, CSMG's assignment was split across two engagements, discussed in Section I and Section II of this report. Section I details specifications and cost analyses provided to Ofcom in an initial assessment of various switching models. Section II details a subsequent engagement based on Ofcom's review of the results of Section I.

Section I

- 2.2. The first module involved designing a set of specifications for each of the models developed by Ofcom. The specification documents contain use-cases (e.g. "Customer switches service", "Set-up of CP on Central Database / Hub") for each switching model and include detailed process diagrams and steps for each use-case. In addition, alongside each use-case, CSMG provided a list of the expected impacts to interfaces. Potential deviations from the happy path⁷ of each process were also considered. CSMG was supported by its sister company, Cartesian, in the development of these specifications.
- 2.3. The specification documents were provided to Ofcom SWG members primarily to support future discussions with industry on the impacts of each switching model. It is important to note that they do not represent final process designs.
- 2.4. As part of this first module CSMG estimated the cost to industry for a set of hypothetical communication providers transitioning to the proposed switching models. CSMG's sister company Cartesian was again involved in determining these cost estimates.
- 2.5. In the second module, CSMG calculated the cost impacts to industry of ensuring that consumer consent was validated before a switch would commence. In this module, costs for Record of Consent were estimated without accompanying specification documents or process flows.
- 2.6. The third module analysed the relationship between the root causes of Erroneous Transfers during switching and the proposed switching model options. We detailed the interaction between these root causes, the proposed switching models and a proposed set of solutions. Finally, the associated cost for each solution was estimated.
- 2.7. The fourth module involved an analysis similar to that of the third, but focussed on problems with switching in the Working Line Takeover process. In this module, improvements to the WLT process were considered, and the relevant cost estimates were developed.

⁷ The "happy path" is the ideal process path as specified by the documentation. This includes aspects of the customer journey, customer interactions with the CPs, as well as the expected flow of the various systems involved. Deviations from the "happy path" are where the customer journey, or process flow does not follow the ideal process path, due to a variety of circumstances (e.g. system returns error, customer does not have correct information to hand to begin switch etc.). The potential deviations are listed in the process specification documentation – however these have not been included in our overall assessment of the costs of these models. See 4.5 - "Cost Modelling Principles" for more details.



Section II

- 2.8. In the first module, CSMG conducted a detailed cost analysis of the individual components that make up E-NoT. For clarity, "E-NoT" means the total of the basic E-NoT model, Record of Consent, solution(s) to Switching ETs and solution(s) to WLT ETs.
- 2.9. In the second module, CSMG evaluated the level of cost wastage for each of the components of E-NoT in relation to a transition from a harmonised NoT model to a database model such as GPL-TxC.
- 2.10. Based on the outputs of the first and second modules, Ofcom identified a new interim model, called NoT+.
- 2.11. In the third module, CSMG provided detailed specifications and costs for the new NoT+ model.
- 2.12. As with the first engagement, CSMG's sister company Cartesian was involved in the specification and costing process.
- 2.13. The total costs to industry that were provided to Ofcom were primarily to support future discussions with industry, on the impacts of a harmonised NoT switching model deployed in the near-term. These results are indicative of total costs to industry. With further industry interaction, the cost estimates could be improved and refined



16



SECTION I: EVALUATION OF SWITCHING MODELS

3. THE PROPOSED SWITCHING MODELS

- 3.1. On behalf of Ofcom, CSMG had previously specified and costed a number of switching models, including the LPL-TxC and GPL-TxC models. In this engagement, Ofcom asked CSMG to specify and assess the costs for three further models:
 - 1. Two incremental models, as described in the Consultation, but with Sim Provide functionality mandated for all migration types:
 - i. An Enhanced NoT (harmonised) option, as specified in the Consultation;
 - ii. An Enhanced NoT and MAC (un-harmonised) option.
 - 2. A GPL-TxC option but with a 'virtual' rather than a physical database, known as "GPL-TxC-V".
- 3.2. The two incremental models share a similar asset-validation and back-end process, but differ in the front-end customer-facing process.
- 3.3. GPL-TxC-V is a variant of the GPL-TxC model published in the February consultation document, which uses a distributed database of customer records instead of a centralised database. As with the GPL-TxC model, the GPL-TxC-V model uses a different asset-validation and back-end process compared to the incremental models.

Mandating of Sim Provide functionality

- 3.4. The two enhanced models all include a modification called "Mandate Sim Provide functionality". This modification is related to the current Openreach Linked Orders process.
- 3.5. Currently some CPs use Linked Orders, or "Sim Provide", an Openreach process which ensures the activation and switching of voice and broadband services at the same time (usually on the same day). Currently, Sim-Provide is available for the MPF -> WLR + SMPF migration type.
- 3.6. Another Openreach process, called "Parallel Orders," allows the migration of WLR + SMPF services to WLR + SMPF. Compared to Sim-Provide, Parallel Orders is less formally defined. It allows the GP to manage two separate orders to the same customer but does not guarantee that bundled services are switched on the same day.
- 3.7. Openreach is currently developing another process, called "Sim 2", in which orders are "Locked Together". In Sim 2, multiple services become more closely associated such that it is not by default possible to have split delivery. Sim 2 has received support from some retail CPs, and Openreach has already made progress in technically enabling this new process for services where the GP is using MPF wholesale services. Sim 2 is envisaged to eventually cover all migration types.
- 3.8. Ofcom wishes to consider harmonising switching processes such that Sim Provide functionality is available for any type of migration (to / from WLR / MPF / other). Note that





Sim 2 provides this functionality. With Sim Provide functionality, bundled services would be switched together, such that there is no down-time for the consumer, either in early deactivation of one service, or late activation of another. Ideally services should be switched within a short time of each other (e.g. an hour), but at a minimum, on the same day.

- 3.9. Given the various options available for linking or gluing orders together, rather than specifically identifying Sim Provide Orders, Parallel Orders, or Sim 2, Ofcom has decided to consider requiring "Sim Provide functionality" for the two incremental models. Although the exact technical solution is still in development, CSMG has included costs for CPs to update systems and processes to be able to consume Sim 2 Functionality as a proxy for costs of such an approach.
- 3.10. It should be noted that the original GPL-TxC specification allowed for the possibility of the TxC being used to enable Sim Provide functionality, and as such it has not been separately included for this model.

Enhanced NoT (Harmonised)

- 3.11. Enhanced NoT (Harmonised) is an incremental model where switches for broadband are carried out under a Notification of Transfer (NoT) process, instead of the existing broadband MAC process. As voice services continue to be switched under NoT, both voice and broadband are now switched under a NoT process, and the model is thus "harmonised".
- 3.12. The Enhanced NoT (Harmonised) switching process performs authentication and Record of Consent via existing methods with the gaining communications provider (GP), albeit harmonised to remove the necessity of MAC for broadband service and the inclusion of the Cancel Other process for switching broadband service.
- 3.13. Ofcom specified a basic Enhanced NoT (Harmonised) model, as described in the consultation document, but with Sim Provide functionality mandated for all order types as discussed above.
- 3.14. The consultation document also specified a number of enhancements which would apply to the basic Enhanced NoT (Harmonised) model.⁸ These enhancements are as follows:
 - 1. Maintain current approach to enforcement against slamming;
 - Mandate use of the Cancel Other⁹ process by all providers offering fixed voice services. Extend and mandate the use of Cancel Other by all providers offering broadband services. Mandating the use of Cancel Other will allow all consumers to stop the order going ahead in the event of slamming;
 - 3. Mandate use of the Sim Provide processes to help address some of the problems around loss of service when switching bundles of fixed voice and broadband services;





⁸ See Figure 24 in February Consultation Document.

⁹ Cancel Other is a BT Openreach process enabling a CP to cancel a voice or broadband order placed by another CP.

- 4. LP communications to provide specific information on Service Implications (SIs)¹⁰ including Early Termination Charges (ETCs)¹¹;
- 5. Continued prohibition on marketing statements/ representations in consumer communications to induce them to stay with the losing provider or cancel their contract with the gaining provider; and
- 6. Universal visibility of all Openreach CLIs¹² (including MPF) either through enhancements to Openreach database/Dialogue Services or requiring MPF providers to establish their own Dialogue Services.
- 3.15. A high level process flow and short summary of the basic Enhanced NoT process is given below.



Figure 4: Basic Enhanced NoT (Harmonised) – High-Level Process Diagram

- 3.16. At the start of the sales process, the Gaining Communications Provider (GP) will make a Dialogue Services type call to the Access Operator (AO), which may be via a Wholesale Communications Provider (WCP).
- 3.17. When services are provided over MPF, the AO may obtain further information of the services from the MPF LP via its own Dialogue Services equivalent. Alternatively, the GP

¹¹ Early Termination Charges (ETCs) are charges incurred by a consumer in cancelling his/her contract before the agreed contract period.

¹² Customer Line Identification is the unique reference of a communications endpoint (normally a telephone number).



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¹⁰ Service Implications (SIs) are information communicated to the customer about the consequences of making a switch. For example, there may be a period of time between end of service with one provider and the start of service with another provider in which the customer has no voice and/or broadband connectivity.

would identify the current MPF provider via a Dialogue Services call to the AO, and then make a call to the MPF provider's own dialogue service, either directly or via a WCP.

- 3.18. Asset Validation for both voice and broadband is performed using the AO Dialogue Services. Asset validation for WLR lines is unchanged, however, the asset validation for MPF lines will be modified to include visibility of data exposed by MPF providers. The default means of providing this visibility would be through Openreach's existing Dialogue Services.
- 3.19. It is expected that asset identification and validation would occur in real-time while the customer is on the call with the agent or online. Therefore, the GP must be able to correctly identify the customer's line during the call. The major difference between the current process and Enhanced NoT (Harmonised) is that asset validation for MPF services should rely on the telephone number rather than the currently-used and less-reliable address-based matching system.
- 3.20. Back-end inter-CP switching processes are expected to be mostly unchanged, apart from the mandated use of Sim Provide functionality to ensure that bundled services switch on the same day.

Enhanced Not & MAC (Unharmonised)

- 3.21. Enhanced NoT & MAC (Unharmonised) is an incremental model where the majority of voice continues to be switched via NoT, and the majority of broadband continues to be switched via MAC. There is no harmonisation of the switching processes.
- 3.22. However, the enhancements specified in the consultation document for NoT and MAC (described above in Sections 3.13, 3.14, and 19.6 respectively), would also apply.
- 3.23. Note that the Enhanced NoT (Harmonised) "Extension of the 'Cancel Other' service for Broadband" would not apply, as in the Unharmonised model broadband is still switched using the MAC process. Cancel Other cannot be used under the current MAC process.
- 3.24. In addition, the use of Sim Provide functionality is mandated under the E-NoT & MAC (U) model.
- 3.25. The "Enhanced NoT and MAC (Unharmonised)" switching process performs authentication and Record of Consent via existing methods with the customer's GP(s) and LP(s), albeit with enhancements to the existing processes, such as exposure (confirmation) of telephone numbers for MPF services to reduce the risk of ETs.





3.26. High-level process flows and short summaries for the separate Voice and Broadband components of the Enhanced NoT and MAC models are given below. Much of this is similar to the NoT and MAC processes discussed above, but is included here for completeness.





- 3.27. At the start of the sales process, the Gaining Communications Provider (GP) will make a Dialogue Services type call to the Access Operator (AO), which also could be via a Wholesale Communications Provider (WCP).
- 3.28. When services are provided over MPF, the AO may obtain further information of the services from the MPF LP via its own Dialogue Services equivalent, or a new interface. Alternatively, the GP would identify the current MPF provider via a Dialogue Services call to the AO, and then make a call to the MPF provider's own dialogue service, either directly or via a WCP.
- 3.29. Asset Validation for both voice and broadband is performed using the AO Dialogue Services. Asset validation for WLR lines is unchanged, however, the asset validation for MPF lines will be modified to include visibility of data exposed by MPF providers. The default means of providing this visibility would be through Openreach's existing Dialogue Services.
- 3.30. It is expected asset identification and validation would occur in real-time while the customer is on the call with the agent or online. Therefore the GP must be able to identify



the line on which the service currently exists. The major difference between the current process and Enhanced NoT and MAC (Unharmonised) model, is that in the new model, asset validation for MPF services should rely on the telephone number rather than the currently-used and less-reliable address-based matching system.



Figure 6: Basic Enhanced NoT and MAC (Unharmonised) – Broadband only Switching - High-Level Process Diagram

- 3.31. During the sales process, voice services will be switched as in Enhanced NoT, and broadband services will be switched as in Enhanced MAC.
- 3.32. Upon request, a MAC should ideally be delivered to the customer immediately. In the phone and website communications channels, the MAC would either be read out to the customer, or provided on a webpage. When a MAC cannot be immediately supplied to the customer, LPs are required to issue the MAC within 2 hours via email, text message, or a phone call placed by the LP to the customer. Other options for receiving the MAC should be available for those customers with disabilities.
- 3.33. Asset Validation for broadband is performed using the MAC mechanism, as is currently used today, apart from when migrating to MPF.
- 3.34. It is expected that asset identification and validation would occur in real-time while the customer is on the call with the agent or online, and thus, as stated previously, the customer would ideally receive the MAC(s) before the end of the call or online session.
- 3.35. MAC(s) would expire after a set period if unused (e.g. 30 days), as per the current MAC process.

GPL-TxC Virtual



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- 3.36. GPL-TxC-V is a variant of the standard GPL-TxC model discussed in the February consultation document.
- 3.37. The standard GPL-TxC model is a gaining provider led model which is similar to Enhanced NoT. However, there are three major differences. Firstly, the GPL-TxC model relies on a central Hub and database. Secondly, the GPL-TxC model utilises a mechanism called the Transfer Code (TxC) process in order to perform asset validation. The TxC process reliably and accurately identifies and tags the correct assets and services to be switched. It provides a unique one-time reference for a migration a "Transfer Code", which is produced at the time of migration by the Hub. This Transfer Code is passed up and down the asset chain of both the LP and the GP, so that the correct assets and services are tagged by all the players in both supply chains. Once the asset has been correctly tagged, the GP is able to use the TxC to initiate the back-end switching process. Finally, GPL-TxC includes an automated Customer Cancel System, which allows the customer to cancel the service by providing a TxC, or by providing a CLI and postcode. The "Cancel Other" process is therefore no longer required, although "Cancel Own" will also remain as an alternative cancellation method.
- 3.38. The GPL-TxC-V model is identical to the GPL-TxC model previously consulted on, with one exception: the Hub no longer stores a centralised database of customer and service details. Instead, this database is distributed, or "virtual", meaning that each CP holds the data for its customers, and makes this available to the Hub via a web services interface. Thus the CPs must expose the relevant data to the Hub to be available on a real-time basis. Virtualisation of GPL-TxC reduces the burden of storage and data security (to an extent) on the Hub. However, the model increases the complexity of data flows between the Hub and CPs, and requires additional CP effort to develop richer interfaces to securely expose sensitive customer data to the Hub.
- 3.39. Under the "GPL-TxC Virtual" switching process, the preferred information for authenticating the user is CLI, account reference, and address. A subset of this information, with for example the post code, may also be used. The Account Reference is provided by their current reseller/provider on their bill. A predefined set of scripted statements is used to perform Record of Consent, alongside the possibility of mandatory recording by the GP of customer consent to the switch.
- 3.40. A high level process flow and short summary of the GPL-TxC Virtual process is given below.







Figure 7: GPL-TxC Virtual – High-Level Process Diagram

- 3.41. The "GPL-TxC Virtual" model utilises existing provider account reference data in combination with a virtual database. Upon a query from the Hub, CPs are required to expose switch-related information for the relevant customer, including the account reference, name, address, CLI, postcode, the services supplied, and the access technology for these services.
- 3.42. The Hub's role is reduced in this model (compared to the "GPL-TxC" model) to that of an intelligent routing mechanism; as the GP will not necessarily know to which CP requests should be sent, the Hub provides a centralised point that can determine the appropriate CPs to retrieve the information needed by the GP.
- 3.43. During the sales process, the customer will provide the GP with a range of customer data such as: their name, address, postcode, CLI, current provider, which services they wish to switch, and their account reference with their current provider (if available). Using this information the GP sales agent will request the Hub to confirm the LP and return details.
- 3.44. The Hub uses the identity of the retail CP given by the customer to determine the Access Operator or MPF Provider to hold definitive information on the line. If the Hub receives a response of "CLI unknown" or a similar message from the LP, it will try other AOs and MPF providers in a logical order until it finds the CLI. If the Hub receives the required information, it will proceed to query the retail LP for information on the services available for switching on the line. This query to the LP and the resulting match against CLI, account reference, address and post code, implicitly authenticates the customer.
- 3.45. The primary means of identifying the customer with the various parties will be through an agreed subset of the customer CLI, Account Ref, CP name, and postcode (postcode is used





as a means to prevent erroneous transfers, for example due to mis-keying of account references or where CPs may use non-unique account references). If the customer does not have their account reference on hand, the GP sales agent will be able to query the Hub in order to retrieve the account reference (lookup using name, address, CLI). This assumes all CLI, including those for MPF lines, are contained in the distributed (virtual) database.

- 3.46. The Hub will relay the combined responses to the GP, allowing them to qualify the sale with the customer using a predefined set of scripted statements. This would elicit a statement of consent from the customer "E.g. Do you wish to switch service(s) X from CP Y to CP Z?"
- 3.47. Asset Validation is performed using the Transfer Code (TxC) mechanism as discussed above.
- 3.48. One Transfer Code can be used to switch multiple services e.g. bundles. Where there is a split switch, i.e. the customer is moving voice and broadband to different GPs, there are advantages to using two separate transfer codes to ensure that the relevant GP takes over the correct assets. There may also be edge cases where it is more appropriate to use two separate TxCs in a bundled switch to give the consumer greater degree of control on when services are switched. Further design work will be required to identify these. It would be the responsibility of the LP chain (including Losing Access Operator) to recognise that a second Transfer Code request has been received for a second service in a bundle and to associate the same Transfer Code with any additional assets.
- 3.49. The Transfer Code may expire after a set period if unused.
- 3.50. The back-end inter-CP switching processes are mostly unchanged from existing processes (other than the need to be able to pass and store the Transfer Code itself, either in place of an existing identifier such as MAC, or in addition to other identifiers).

Back-End Processes

- 3.51. During the switching period, post-sales communications from the LP will be used to inform customers of early termination charges and service implications. Under all the new switching models discussed in this report, customers will receive an actual estimate of their ETCs as well as clear information regarding the service implications. The exact format of this communication will be determined in future design phases. At the same time, similar to current NoT processes, a welcome correspondence from the GP will be sent to the customer, setting out the details of the new service.
- 3.52. Under GPL-TxC-V, there are changes to the cancellation processes. Under the current switching system, there are two Cancel processes, "Cancel Own" and "Cancel Other"¹³. In the GPL-TxC models (GPL-TxC and GPL-TxC-V), the "Cancel Other" process has been removed. Instead, customers will be able to cancel their switches, during the switching period, by calling an automated Customer Cancel Service. Customers could cancel the

¹³Currently, GPs can use the "Cancel Own" process to cancel a switch during the switching period. This may occur if a customer calls the GP and requests cancellation. "Cancel Other" can also be used by LPs to cancel a switch during the switching period. This is provided for situations in which it may be more appropriate for a customer to contact their current provider and request cancellation of the switch (e.g. if a customer has been slammed).



service by providing a TxC, or by providing a CLI and postcode. "Cancel Own" will also remain as an alternative cancellation method.

4. COST METHODOLOGY

Overview

- 4.1. CSMG developed a cost methodology based on a bottom-up assessment of costs for a set of fixed line operators. The same cost methodology was used in previous analysis on switching models, including CSMG's report in September 2011¹⁴, and CSMG's response to PwC's consultation submission, produced March 2013.¹⁵
- 4.2. Cost estimates were developed for the three switching models: GPL-TxC Virtual, Enhanced NoT (Harmonised), and Enhanced NoT & MAC (Unharmonised).
- 4.3. In addition, cost estimates were developed for Record of Consent and for proposed solutions to address erroneous transfers in both the service switch and working-line takeover use cases.
- 4.4. The same cost methodology was used across all of these discrete modules.

Key Cost Modelling Principles

- 4.5. When constructing the independent cost analysis, CSMG applied a series of key principles. These were:
 - 1. *Costs should be incremental.* CSMG sought to capture only the incremental systems and process costs of transitioning to each of the three processes, compared to the processes and systems in place today for the current switching processes. This perspective impacts costs in two ways:
 - i. Firstly, it is expected that a large proportion of today's cost items (e.g. customer sales staff, CRM systems, fulfilment systems) will be able to be re-utilised under these new switching models. For example, the independent cost methodology does not estimate the total cost of the CRM and fulfilment systems for CPs, but only estimates the cost of the modifications required to these systems under these new switching processes. Similarly, for staff costs, CSMG has not estimated the total staff cost, but would include any increases in staff levels required, or any additional training which staff were required to undertake.
 - ii. Secondly, from a process perspective, the cost models take into account the difference in processes relative to current switching processes. For example, if under a new process the CSA time taken to handle a switch is 14 minutes, this needs to be measured relative to existing switching times. The cost included in the model would therefore reflect only the difference between the new amount of time taken for a CSA to process the switch, and the current amount of time taken for this. Such a cost could be both positive (more cost for industry) or negative (less cost for industry).



 $^{^{14} \} http://stakeholders.ofcom.org.uk/binaries/consultations/switching-fixed-voice-broadband/annexes/csmg_report.pdf$

¹⁵ Published alongside this document.

- 2. Only the formal portions of the switching process should be included in cost estimates. Our methodology only estimates the cost of the formal portions of the switching process. For example, when analysing the costs of gaining provider led models, only the customer interaction with the Gaining Provider is included in the costs, and it does not include any conversations the customer may have with their current provider as part of their customer switching journey. Similarly, only one losing provider and gaining provider interaction are assumed when calculating the losing provider led model costs. The costs for LPL models do not reflect situations where a customer may contact their Gaining Provider first before speaking to their current provider. In addition, other deviations from the "happy path" such as problems in the processes are not included in the costs.
- 3. *Costs are based on a static view of the industry.* We have not taken into account any changes in the market with regards to mix of channels to market, number of providers, or other industry trends e.g. increasing prevalence of bundling.¹⁶ However recent data has shown that the total number of annual switches has increased from 2.1m (as used in the 2011 analysis) to 2.7m (as used in this analysis). We have therefore updated this figure. The impact of this update is that the GPL-TxC model is now less expensive than in the 2011 report, and the LPL-TxC model is now more expensive. The explanation for this is given in the footnote below.¹⁷

Estimating CP Costs

- 4.6. In order to estimate costs, CSMG assessed the likely material system and process changes for a CP and estimated the incremental costs compared to today's switching processes. CSMG conducted this analysis by breaking down the impacted systems and processes using the TM Forum's eTOM and TAM frameworks. Having done this, CSMG:
 - 1. Estimated the development time and infrastructure costs required to set-up the various system changes under each model;
 - 2. Estimated ongoing maintenance costs for these system changes;
 - 3. Estimated the cost of necessary training and documentation of new processes; and
 - 4. Estimated the increased personnel cost resulting from changes in processes.
- 4.7. CSMG used this methodology to estimate the set-up and ongoing costs for a set of fixed line operators. These operators were divided into three segments:

¹⁷ Under harmonised GPL models, each incremental switch reduces Customer Service Agent (CSA) cost, as the customer no longer has to call the losing provider to obtain a MAC for the broadband service. Conversely, under harmonised LPL models, the customer now has to make additional calls to the losing provider to obtain a MAC (or equivalent) for the voice service, and so CSA cost is increased. CSA cost is a major driver of total switching model costs, and so increasing the number of switches has a noticeable effect on the GPL-TxC and LPL-TxC model costs, with the former decreasing, and the latter increasing.



¹⁶ If the trend towards bundling were to be taken into account in the model, this would increase the cost of the LPL models relative to the GPL models. This is because, under an LPL model, a customer needs to call each of their providers in order to assemble a bundle, and therefore a greater amount of customer service representative time would be required to perform the switch.

- 1. Tier A CPs: CPs with relatively simple operations, which utilise Third Party Integrators (TPIs)¹⁸ to maintain nearly all IT systems. These may include: CRM systems, Billing systems, Order Management and Partner Management systems (such as interface to electronic gateways). In this instance, the TPI is in effect the IT department for the CP. On the whole, these CPs tend to be smaller and would generally have fewer than 10,000 customers (as it may be inefficient to develop or manage own IT systems at this scale). In general, Tier A CPs are not likely to directly incur significant systems costs, as their TPI supplier will likely action these changes on their behalf. However, we would expect these costs to be incurred by the TPI and ultimately passed through to the CPs, and therefore TPI costs have been included in the overall costs. Tier A CPs will also incur direct costs for any additional process costs under the new models.
- 2. Tier B CPs: Larger and more complex than Tier A CPs, Tier B CPs may own and maintain some parts of their IT systems, such as the CRM and Billing systems, but may utilise TPIs to perform some back-end functionality such as Service Order Management, and interfaces with the Access Operator or Wholesale Provider's electronic gateways. In contrast to Tier A CPs, Tier B CPs will likely encounter significant system impacts and costs, depending on the extent to which they utilise TPIs. In terms of size, Tier B CPs span a wide range, with between 10,000 and 1 million fixed line customers.
- 3. Tier C CPs: These CPs are the largest, and have the most complex operations of all the three tiers. Tier C CPs tend to own or operate their own IT systems stack (and may have multiple system stacks) and will be heavily involved in changes to any part of their IT systems, including both front-end and back-end changes. For this reason, these CPs tend to have the largest system change impacts. Tier C CPs are also generally large, with an average customer base over 1 million fixed line customers. They may offer multiple products, including fixed line, broadband and calls packages, as well as having multiple sales channels to manage. This may increase the number of systems impacted by changes to the switching process.
- 4.8. A further breakdown of the individual cost components (using the TM Forum eTOM/TAM framework) for each of these models can be found in Annex 1.

Calculating the Total Costs to Industry

- 4.9. Using Ofcom industry data, CSMG estimated the number of CPs in each of the Tier groups and multiplied the cost for each of these CPs by the relevant amount to estimate a total cost for all retail CPs in industry.
- 4.10. Fixed costs were estimated based on the necessary man power and hardware / software costs required to realise the implementation for each model.
- 4.11. Variable costs are driven by the number of switches on an annual basis. CSMG used data from industry as an input to these calculations.
- 4.12. For wholesale and access provider costs, CSMG estimated industry costs and validated these with responses from wholesale and access providers.



¹⁸ Third Party Integrators (TPIs) provide BSS/OSS services to a range of communications providers, such as CRM, Billing, and Order Systems. Many smaller CPs rely on TPIs as for basic BSS/OSS, but larger CPs may also use TPIs for specific services and functionality.

4.13. CSMG also conducted a sensitivity analysis of the inputs, making assumptions around low, medium and high cost assumptions for each of the individual cost drivers. CSMG calculated the outputs for a range of sensitivities for key cost input drivers such as developer day-rates, cost per Customer Services Representative minute and the operating cost to capital expenditure ratio assumed for system changes. As a result, the cost methodology produces a range of low, medium, and high total industry costs dependent on these sensitivities.

Unknown Costs

- 4.14. Wholesale provider and access operator costs were provided by industry for the GPL-TxC and LPL-TxC models. Wholesale provider costs have been estimated for all other models. Access operator cost inputs have been provided by Openreach for the enhanced models, with a few exceptions.
- 4.15. Unknown costs have also been identified in the Switching ET and WLT ET analysis and are discussed in detail in the relevant Sections.



5. SWITCHING MODEL ANALYSIS RESULTS

5.1. All discussion of switching models in this section refers to the basic switching model, that is, not including Record of Consent or solutions to switching or WLT ETs.

Set-up Costs

- 5.2. CSMG's cost methodology found that, at a total industry cost level, the GPL-TxC Virtual cost had the highest set-up costs. In this model, there is a requirement to construct and maintain a central Hub to perform routing between parties during a switch, and for all CPs to develop resilient interfaces with the Hub that could expose customer data in real-time.
- 5.3. The GPL-TxC Virtual model has marginally higher set up costs than the GPL-TxC model: In the virtual model, CPs must expose more of their own customer data in a standard format, requiring more distributed effort as opposed to centralised effort at the Hub in the GPL-TxC model.
- 5.4. Under both GPL-TxC and GPL-TxC-V, some cost for cleaning and standardising addresses is included in the centralised Hub costs. Once the initial upload is complete, the Hub would keep track of changes.
- 5.5. There are two additional costs in GPL-TxC-V. Firstly, the Hub must be able to handle address variations between CPs and perform reconciliation if required. Secondly, CPs must expose a greater range of customer data in real-time, which will require more interface design and testing, and more internal systems updates to supply this data to the Hub.
- 5.6. The LPL-TxC model has a significant set-up cost to account for the industry effort in including the TxC process, but a lower set-up cost than GPL-TxC due to the lack of a central Hub to coordinate switching, and correspondingly, the lack of need for CPs to set up interfaces to that Hub.
- 5.7. The two incremental models have a similar level of set-up cost:
 - 1. Enhanced NoT has the higher set-up cost of the incremental models, resulting from the many enhancements required to the NoT process, and the impact of harmonisation in decommissioning the MAC process across industry.
 - 2. The Unharmonised model has the lower set up cost of the incremental models, requiring no harmonisation, but the full range of enhancements across both the NoT and MAC processes.
- 5.8. Note that in these models, multiple processes and systems are affected at multiple levels in the order stack, hence the similar levels of cost between them. The GPL-TxC models require a greater investment in updating systems and processes when compared to the enhanced models.



5.9. Set-up costs for each switching model are given in the following table.

Figure 8: Basic Switching Model – Set-up Costs (£m)

<u>Set-up Costs (£m)</u>	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
Setup Cost	£25m	£26m	£18m	£17m	£9m

5.10. Costs per CP are given by industry tier (see Section 4.7 for details and explanation) in the following table. Note that negative values represent a cost saving to industry with respect to current expenditures.

<u>Set-up vs. Ongoing Cost by</u> <u>Tier (£)</u>	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)	
Set-up						
CSMG Tier A	2,200	2,700	300	2,400	2,500	
CSMG Tier B	392,500	442,500	231,500	272,000	198,000	
CSMG Tier C	1,350,000	1,435,000	577,500	980,000	892,000	
TPI	352,500	402,500	220,000	210,000	137,500	
Ongoing						
CSMG Tier A	-1,041	-941	2,609	-881	163	
CSMG Tier B	48,875	58,875	97,281	27,175	32,862	
CSMG Tier C	-166,103	-149,103	1,054,153	-204,103	85,660	
ТРІ	70,500	80,500	44,000	42,000	31,500	

Figure 9: Per CP Set-up and Ongoing Costs per CP by Tier (£)

Ongoing Costs

- 5.11. In general, harmonised GPL models benefit from the removal of the requirement for customers to speak to their current providers to obtain a MAC. Thus the call time, and associated CSA cost, for calls to the LPL is effectively removed. At an industry level this leads to a significant cost reduction.
- 5.12. The model with the lowest ongoing cost was the Enhanced NoT (Harmonised) model. This model is less expensive than the GPL-TxC models, because there is no requirement for industry to develop and implement the Hub, or the Transfer Code (TxC) across both frontend and back-end switching processes. E-NoT does include some significant impacts to industry, such as decommissioning the MAC process broadband products, mandating Sim Provide functionality, and universal visibility of MPF CLIs (affecting primarily MPF providers and Openreach). These costs are not as significant as those associated with industry adopting a Transfer Code.
- 5.13. Using the same reasoning, on an ongoing basis, LPL-TxC is the most expensive model, in which all voice switches (currently about three quarters of all switches) move from a GPL to a LPL process, bringing a requirement for the customer to speak to the LP, and





introducing the associated CSA cost. There is additional ongoing cost for industry to maintain and operate the TxC process.

- 5.14. The GPL-TxC and GPL-TxC Virtual models have slightly different ongoing cost profiles. The latter is higher, and includes an ongoing requirement for CPs to maintain the processes and systems which support rich and secure real-time interfaces with the Hub.
- 5.15. Finally, the Unharmonised model is the closest to the current status quo, but call time for broadband switches benefits from the dedicated MAC line effect. It also introduces additional cost in the form of enhancements to both the current NoT and MAC processes, which create additional burden in maintaining new systems and processes implemented in this model. Overall the ongoing cost impact is relatively small in comparison to other models.
- 5.16. The range of ongoing costs displays is greater than that for setup costs, as demonstrated in the following table.

Ongoing Costs (£m)	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & E- MAC (U)
Ongoing Cost	£1.8m	£2.1m	£6.9m	£0.2m	£1.1m

Figure 10: Basic Switching Model – Ongoing Costs (£m)

Net Present Cost Analysis

- 5.17. The initial set-up costs and ongoing costs are combined using a net present cost (NPC) methodology as discussed in Section 1.24. NPC was calculated for a 5 and 10 year timeframe, and was discounted using the social rate of time preference of 3.5% in real terms.
- 5.18. The ranking for the models in terms of NPC depends on the timeframe of calculation. Models which have lower set-up cost and higher ongoing costs are comparatively favoured under a 5 year calculation, and models with higher set up costs and lower ongoing costs are comparatively favoured under a 10 year calculation.
- 5.19. The following discussion of NPC relates to the longer term view, i.e. the 10 year timeframe. It excludes additional costs associated with Record of Consent, or solutions implemented to reduce Erroneous Transfers during a switch or a working line takeover.
- 5.20. The model representing the greatest overall cost to industry on an NPC basis is the LPL-TxC model. Costs are driven largely by the LPL harmonisation effect; that is the new ongoing costs of customers having to make calls to the Losing Provider to obtain a TxC for voice and bundled service switches.



- 5.21. The second most expensive model is GPL-TxC-V. The high cost in this model, as in GPL-TxC, results from significant industry effort to design and implement the TxC mechanism, to set up a centralised Hub to coordinate switching, and from an ongoing requirement on CPs to securely and robustly expose key customer data to a centralised Hub. However, this model benefits from the GPL harmonisation effect (that is, the removal of customer calls to obtain a MAC).
- 5.22. The next most expensive model is the GPL-TxC model with a centralised database. It is similar to GPL-TxC-V, but requires less complex interfaces between the Hub and CPs, and is thus slightly less expensive.
- 5.23. The first variant of the Enhanced NoT model (see paragraph 3.12) is the second least expensive switching model. Despite the significant costs of removing the MAC from existing systems and various other enhancements, the GPL harmonisation effect results in a low NPC.
- 5.24. Finally, the Unharmonised model is the least expensive, benefitting from a reduction in call centre cost from shorter MAC calls on the dedicated MAC line, and requiring the least effort in updating current systems and processes.
- 5.25. Net present costs for a 5 and 10 year timeframe are given in the following table for each switching model. The annualised 10 year net present cost is also given.

<u>Net Present Cost (£)</u>	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & E- MAC (U)
5 Year NPC	£33m	£35m	£49m	£18m	£14m
10 Year NPC	£40m	£43m	£75m	£19m	£18m
Annualised 10 Year NPC	£4.0m	£4.3m	£7.5m	£1.9m	£1.8m

Impact to Wholesale Providers and BT Openreach

- 5.26. CSMG's cost analysis focuses on the impact to retail communications providers and the new Hub for the GPL-TxC models. The majority of overall industry impact is driven by costs to retail CPs, simply because there are almost 300 companies providing fixed line voice and broadband services in the UK.
- 5.27. There is one outstanding issue related to the costs of the Enhanced models that would be incurred by parties other than retail communications providers, i.e. wholesale providers and the access operator, Openreach:
- 5.28. CSMG did not engage with the two major wholesale providers, BT Wholesale or Cable and Wireless Worldwide, during the timeframe of this project. Instead, we estimated costs for the Enhanced models by using cost estimates provided for the TxC models in previous analysis as benchmarks. These costs would need to be adjusted and validated in future work.



- 5.29. For this issue, CSMG estimated costs to the WSPs by referencing prior cost information provided. These costs are therefore included in the totals.
- 5.30. At this stage, it is reasonable to assume that for the costs impacts discussed above, the difference between CSMG's estimates of the costs for WSPs and the costs according to those WSPs would not be sufficient to affect the relative attractiveness of the switching model option on a cost basis alone.
- 5.31. However, regardless of cost, the feasibility, timeframe, and wider secondary ramifications of each of these cost impacts for WSPs and Openreach has not been fully assessed. A better understanding of the potential impacts to wholesale providers and BT Openreach would enhance this aspect of the comparison between switching model options.



6. RECORD OF CONSENT

Introduction and Methodology

- 6.1. CSMG was asked by Ofcom to conduct a cost analysis of the requirement for CPs to ensure a record of customer consent is obtained and stored.
- 6.2. Records would be retrievable on an individual basis.
- 6.3. Costs for storage periods of 6, 12 and 24 months were considered.
- 6.4. Of com specified three options for the recording of customer consent, related to the sales or customer communications channel used by the customer to initiate the switch:
 - 1. Call recordings for all successful telesales calls of the customer's consent to transfer;
 - 2. A written Record of Consent to transfer for all successful retail/shop and doorstep sales; and
 - 3. For online sales, outputs from order systems or from online account interactions relating to the sale in question.
- 6.5. As consumers interact across all of these channels, costs were estimated for each option and the total was calculated based on the relative split of sales by channel.

<u>Results</u>

- 6.6. Costs were calculated for enhancements to the current Record of Consent process using the same methodology as that used for the switching models.
- 6.7. Total industry cost is primarily driven by the requirement for Tier A CPs to set up call recording solutions and manage these on an ongoing basis.
- 6.8. Solutions are readily available on the market for integration with a range of vendor IP Telephony systems, and normally comprise a perpetual license fee payable on a per-seat basis, with ongoing support charged at 20% of this set up cost. Additional hardware would be required to host the call recording server and store recordings.
- 6.9. For the larger Tier B and Tier C CPs, existing call recording systems are already in place. Responses from CPs to a SWG data request indicated all outbound and inbound calls with customers are normally recorded. The cost impact to larger CPs is therefore minimal, as operations already exist to record customer calls.
- 6.10. However, additional cost will be incurred as Tier B and C CPs will need to configure their systems to log and organise call recordings such that they are easily retrievable in the case of a customer or GP/LP initiated dispute, and to install the necessary hardware to store call recordings for these calls for up to 24 months separately.



- 6.11. Where current call recording systems are PCI Compliant,¹⁹ there may be an additional need to store call recordings in an encrypted form. Additional effort would be required to set-up encryption keys for secondary storage of call recordings.
- 6.12. Providing that only call recordings for successful telesales calls (both outbound and inbound) for fixed voice and broadband services need be recorded (as opposed to recording and storing all customer interaction for 24 months), the incremental storage requirements will be minimal. Note that costs to Tier B and Tier C CPs do not vary significantly between storing calls for 6, 12, and 24 months, providing these call recordings can be kept separately from the main call recording storage. For Tier As, the volume of calls to be retained is small in storage terms, and so the variable cost of storing more calls is also negligible compared to setup and licensing costs.
- 6.13. For the purposes of these costs, it is assumed that all CPs will store call recordings for 12 months.
- 6.14. Costs will be incurred in configuring the system such that these call recordings are treated separately, and can be retrieved and sent (given appropriate data protection controls) by CRM systems in the event of a dispute or customer query.
- 6.15. Additional costs will be borne by all CPs for storing a written Record of Consent for face to face sales, and for modifying web ordering systems to store an additional output of a customer action. These costs are expected to be minimal. Therefore, providers would only save cost on Record of Consent if they did not make sales to customers while on the phone (either an outbound or inbound call).
- 6.16. The total industry initial setup costs, ongoing annual costs, and net present costs for 5 and 10 year timeframes are given in the following table. The per-customer 10 Year NPC and per-customer 10 Year NPC as a proportion of annual revenue are also given.

<u>Record of Consent</u>	Set up Cost	Ongoing Cost	Net Present Cost (£)	Annualised Per Customer 10 Year NPC	Annualised Per Cust 10 Year NPC as % of Rev
5 Year Timeframe	C4 1m	<u>()</u> (m	£7m	£0.04	0.01%
10 Year Timeframe	£4.1m £0.6m	£9m	£0.05	0.02%	

Figure 12: *Record of Consent Industry Costs*





¹⁹ The Payment Card Industry Data Security Standard (PCI DSS) is a proprietary information security standard for organizations that handle cardholder information for the major debit, credit, prepaid, e-purse, ATM, and POS cards. PCI Compliance is required in call centres where spoken payment card information may be recorded.
7. Switching Erroneous Transfers

Introduction and Methodology

- 7.1. As part of its work on switching options, CSMG also conducted an analysis into the relationship between the switching models and erroneous transfers during switching, hereafter referred to as "Switching ETs".
- 7.2. More specifically, CSMG analysed the extent to which the switching models mitigated Switching ETs. Where there was ET harm remaining, we then considered the additional enhancements, hereafter referred to as "solutions", which could proportionally mitigate the remaining Switching ETs.
- 7.3. We considered the cost of these solutions for each switching model, and their likely effectiveness.
- 7.4. Finally, therefore, we were able to make an assessment of the overall ability of the switching model, plus a set of additional solutions, to address Switching ETs.

Results

- 7.5. The Switching ET analysis was conducted in several stages:
 - 1. Review of the root causes of Switching ETs
 - 2. Identification of solutions to Switching ETs

For each model:

- 3. Assessment of the extent that each switching model addresses switching ETs
- 4. Identification of the situations or types of Switching ETs not addressed by the model
- 5. Selection of solutions to address these remaining Switching ETs
- 6. Estimation of the cost of those solutions
- 7. Discussion of the benefit of deploying those solutions
- 8. Summary of how effectively the model, plus solutions, addresses Switching ETs.
- 7.6. In the first stage, we reviewed the root causes of Switching ETs. These are given in the following table. Wrong address selection, wrong CLI/line selection, and incorrect Openreach data are the major causes of Switching ETs.



Cause	Description	% of ETs	Causing Parties	Impacted Parties
Wrong address selected	Miskeying, incorrect info input, multiple occupancy of buildings, similar addresses under same post code; can include WLT	53%	Gaining customer GP agent GP systems	Losing customer Gaining customer LP (of ET "victim") GP
Wrong CLI/line selected	Miskeying, incorrect info input, multiple lines at same address; can include WLT	21%	Gaining customer GP agent GP systems	Losing customer Gaining customer LP (of ET victim) GP
Lack of visibility of MPF CLIs	Unable to use CLI to identify line/CLI out of date, forces into reliance on address- based match	Included in previous two causes.	Openreach MPF providers	Losing customer Gaining customer LP (of ET victim) GP
"Cancel Other"	LP fails to use (correct) process, losing customer loses service despite having responded to NoT	Unknown.	LP	Losing customer Gaining customer LP (of ET victim) GP
Incorrect Openreach data (a)	Insufficiently granular data or near duplication of addresses can lead to selection of wrong address (e.g. Gamer/Garner)	25%	Openreach	Losing customer Gaining customer LP (of ET victim) GP
Incorrect Openreach data (b)	Termination points can be incorrectly mapped following missed updates; ceased lines might not be reflected accurately			

Figure 13: Major Root Causes of Erroneous Transfers

7.7. The second stage identified potential solutions to Switching ETs. A number of potential solutions were identified. Those which were not reasonable or practical were discarded, such as development of better incentives for CPs to make efforts to limit ETs. The identified solutions are given in the following table.



Solution Category	Solution	Description	10 Year NPC
Address Fixes	OR Database Cleanup	Correct mismapped network elements, i.e. where Openreach's database does not reflect the actual state of their network. Clean-up address data, particularly duplicate and near duplicate addresses, possibly via reconciliation against known clean(er) data. Would require cooperation between Openreach and retail CPs, and data sharing.	Unknown, but potentially significant.
	Unique address reference via NLPG	Introduce address standards, ideally across the whole industry. The National Land and Property Gazetteer is a potential option. This model involves various governmental and private organisations and includes specific measures to handle multiple occupancies. Dwellings receive a unique, persistent identifier with its own lifecycle. Alternative models should also be investigated; for example, the Royal Mail's PAF data is already widely used. Royal Mail also offers a Multiple Residence product, designed to expand upon PAF and address issues around identification of multiple dwellings behind a single delivery point.	Unknown, but potentially significant.
Customer Provided Information	Mandate that CPs only place a NoT order where there is an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	The CSA should follow industry best practice guidelines in exhausting realistic lines of enquiry to identify the correct line. This could include, for example, asking the customer to provide the CLI of the line in question, or using information about the pending cease of a line. Where the CSA is still unable to determine the correct line to be switched, the CSA should default to using the cease and re- provide process.	£3.2m
Non DN Enhancements	Gen of MAC for non DN services (inc. MPF)	Currently, MAC generation requires a CLI. Some NGA services will not necessarily have a CLI. Openreach and other CP systems and processes would require amendment to allow generation of MACs against service identifiers other than CLI.	£1.2m
Cancel Own / Other	Mandate Cancel Other (Voice + BB)	Cancel Other exists as a process for NoT, but some CPs, particularly smaller ones sometimes do not or cannot (owing to lack of automation) respond sufficiently quickly to Cancel Other requests. This solution sees adherence to the Cancel Other process being made mandatory for all CPs.	£3.5m

Figure 14: Potential Solutions to Switching ETs



Allow Hub to make Cancel Own/ Other request	Instead of the LP being required to initiate the Cancel Other, the losing (or gaining) customer can request cancellation of the unwanted switch from a central system. This system can then inform the relevant parties, including the Access Operator depending on the process design. This solution gives greater auditability to cancellation requests themselves and can, dependent on design, remove the amount of work required from the retail LP.	£33k
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^{7.8.} Having identified the causes and potential solutions of Switching ETs, we then considered each switching model in turn (steps 3 to 8 as indicated under paragraph 7.5).

GPL-TxC

- 7.9. Implementation of the GPL-TxC model would result in a reduction in the incidence of Switching ETs for three main reasons.
 - 1. Firstly, during switching, CPs will consult the central Hub database which has been populated from retail CP line and address data. This data is likely to be more accurate than Openreach data simply because a retail CP has an active relationship with its customer, knows the CLI, and knows the service and billing address details.
 - 2. Secondly, CPs will set up standardised interfaces to the Hub, which will in turn return standardised address information in the agent customer interface, hence there is less likely to be error resulting from variation in systems and data formats between CPs.
 - 3. Thirdly, there are more options for a GP to identify the correct line to be switched, in that the Hub can be queried with any combination of customer name, address, post code, CLI, account reference, and the identity of the LP. This will allow GPs to narrow down the range of possibilities when searching for the correct address (or line within a property), and so the wrong address or line is less likely to be selected.
- 7.10. Despite the improvements offered by the GPL-TxC model, a smaller number (in comparison to today) of Switching ETs will remain. These Switching ETs could occur when multiple active lines exist in the same property, under the same account name, but the customer is unable to provide the CLI to be switched. A GP wishing to push through an order might just suggest one of the CLIs to the customer, who could mistakenly confirm, and the wrong line would be switched. Alternatively, a failure by the retail CP to keep the Hub up to date on address format changes, or "unofficial address changes" such as the action of "slum landlords", could lead to address inconsistencies. It is, however, expected that these incidences are likely to be infrequent.
- 7.11. A final type of switching ET that would not be fixed would be one where Openreach has incorrectly mapped a termination point to a CLI. This issue is considered to be relatively rare (although further investigation is required to ascertain the exact number of cases this would apply to), and applies across all the switching models to the same extent. A solution to this particular issue has not been considered in this report, but it would be within Openreach's remit to investigate the scale of this problem, and address it appropriately.
- 7.12. To address these remaining problems, the Hub should be able to use all sources of data to help the CSA to identify the correct line. The cost for this has been factored into the design work of the Hub, and so is not included here.



7.13. The GPL-TxC model as a whole provides a better set of tools for GPs to identify the correct assets. We conclude, therefore, that the GPL-TxC model has the potential to significantly reduce the incidence of Switching ETs.



GPL-TxC-V

- 7.14. The GPL-TxC-V model (distributed database) is, from a switching ET perspective, it is identical to the GPL-TxC model. All of the above discussion related to Switching ETs and resulting costs therefore applies to GPL-TxC-V.
- 7.15. One minor point is that as the GPL-TxC-V model does not hold the identity of the LP, where the customer is unable to provide this, the Hub will have to "ping" the interfaces of CPs in a logical manner to find a CLI or address match. This is not envisaged to take a significant amount of time; the Hub need only contact the major Tier C and Tier B CPs, and TPIs (to cover Tier As), to locate the correct LP. Electronically this may only take a few seconds, and so assuming all CP interfaces were up and responding correctly, from a user experience point of view, it would be identical to GPL-TxC.

<u>LPL-TxC</u>

- 7.16. Implementation of the LPL-TxC model would result in a very significant reduction of Switching ETs for a single reason: that the LP identifies the asset to be switched, and the identification of that asset is passed to the GP via the customer in the form of a Transfer Code (TxC).
- 7.17. It is therefore extremely unlikely that the wrong line is switched, as the TxC process ensures that all parties involved in the switch have identified the same line.
- 7.18. The only remaining Switching ETs would be where Openreach had incorrectly mapped the termination point, as per the other models.
- 7.19. There is therefore no additional solution required, and no additional cost for this switching model.

<u>E-NoT</u>

- 7.20. Implementation of the E-NoT model has the potential to decrease or increase the occurrence of Switching ETs.
 - 1. A decrease in Switching ETs would result from the "Universal Visibility of MPF CLI" enhancement, where the GP can "see" the CLI of a customer where the LP is MPF provider. This removes the need to identify an MPF line using only address based matching, which is less reliable. Consequently, Switching ETs associated with switches from MPF lines are expected to be reduced.
 - 2. However, the removal of the broadband MAC process would impact broadband-only switches, which no longer have the "protection" of a MAC which uniquely identifies the asset to be switched. Broadband-only switches, which make up less than one tenth of overall switches, would be more likely to suffer a switching ET.
- 7.21. On an aggregate basis, the two effects could offset each other, but it is not clear to what extent and whether the net effect would be an increase or decrease in Switching ETs.





- 7.22. Voice only switches, and voice and broadband switches, from WLR lines, would be unlikely to be materially affected in the near term.
- 7.23. There is, however, a risk that if current processes are not corrected, address data pollution will continue to be an issue, and could in time increase. With the introduction of new services, such as those that are not directly associated with a CLI, there is a risk of Switching ETs for these new services.
- 7.24. Given the already significant level of consumer harm resulting from Switching ETs, the risk of a net increase as a result of changes in the E-NoT model, and the risk of future address data pollution, there is argument that Switching ETs should be proactively mitigated in the Enhanced NoT model.
- 7.25. Openreach address data inaccuracies or "pollution" has surfaced as a primary root cause of Switching ETs during recent root cause analysis conducted by the OTA. The most appropriate solution therefore, to Switching ETs under E-NoT, is to ensure address data accuracy in the Openreach database, both via a retrospective data "clean-up" and via modifications to the ordering process to ensure that Openreach and Retail CP address data remain aligned and consistent.
- 7.26. Collaboration will be necessary. Retail CPs and Openreach will have to work together to first understand the scale and extent of address data pollution and better understand the root causes. There will then be a process of reconciliation, resolving any discrepancies through automatic electronic matching and delta management. A major cost is also likely to arise from human involvement in the proportion of cases which cannot be resolved electronically.
- 7.27. Just as the extent of the address data pollution is unknown, the extent of the effort required by industry is also unknown. There is a risk that it could stretch into the millions of pounds, potentially greater than ten million pounds, depending on the complexity of the resolution process. Further analysis and dialogue between Openreach and retail CPs would be required to better understand the likely range of costs.
- 7.28. In addition to the Openreach database clean-up, a further solution would be to mandate that CPs only place a NoT order where there is an exact match. Under this solution, if the GP is unable to identify an exact match, and there is a risk of an ET, the GP should default to a cease and re-provide process. In addition, the CSA should take all reasonable steps to ensure that the correct line is identified, having regard to industry best practice guidelines in attempting to identify the correct line.
- 7.29. The cost of mandating that CPs only place a NoT order where there is an exact match and have regard to industry best practice in attempting to identify the correct line is estimated to be £3.2m on a 10 Year NPC basis, as given in the above "Solutions" table.
- 7.30. With the Openreach database clean-up, and mandating that CPs must only place a NoT order where there is an exact match, Switching ETs would be substantially reduced under E-NoT, with the following two caveats: Firstly, the cost of the Openreach database clean-up is unknown, but could be significant. Secondly, it is not clear what level of Switching ET harm would remain, and there are risks that the Openreach database clean-up is either



not fully successful, or that future processes or CP compliance are inadequate to prevent address data pollution

7.31. Thus, even with these two enhancements, there are still risks in the costs and benefits of the E-NoT model with regards to prevention of Switching ETs.

E-NoT & MAC (U)

- 7.32. The E-NoT & MAC (U) model contains only one enhancement that would reduce Switching ETs: "Universal Visibility of MPF CLI". With this enhancement, the GP can "see" the CLI of a customer where the LP is MPF provider, thus there is no longer a need to identify an MPF line using only address based matching, which is less reliable. Consequently, Switching ETs associated with switches from MPF lines are expected to be reduced.
- 7.33. For switches from WLR lines, the occurrence of Switching ETs would not be materially affected by this model.
- 7.34. We considered the value of the Generation of MACs for non-DN services in this model. Under a hypothetical E-MAC model, switches from MPF providers would also require a MAC, and so as part of the basic specification, MACs would have to be generated for this type of switch. This requirement would not exist under the Unharmonised model, as in almost all cases, when a consumer switches service from a MPF provider, both the voice and broadband services are moved under the NoT process.
- 7.35. However there is potential scenario where a consumer moves only the broadband service from an MPF provider. The voice service with the MPF provider would have to be reissued as WLR3, and the broadband would be ordered as SMPF with the GP, using NoT. Currently, MPF providers do not allow this type of switch, or would provide pricing to the customer that would discourage the customer adopting such a combination of services and providers. However, in the future, there may be cases where this sort of switch becomes more common, and in which case, a MAC would need to be generated for the MPF broadband service to be switched.
- 7.36. The cost of this solution would be £1.2m on a 10 Year NPC basis. We have *not* included this £1.2m cost in the final cost assessment for Switching ETs, as there is currently no evidence that suggests it would definitely be required.
- 7.37. With regard to remaining Switching ETs, the E-NoT & MAC (U) model suffers from Openreach address data pollution to a similar extent as that in E-NoT. Therefore, the same two solutions recommended for E-NoT are also recommended under this model, i.e. the Openreach database clean-up, and the mandating that CPs only place a NoT order where there is an exact match, having regard to industry best practice guidelines in attempting to identify the correct line.
- 7.38. Similarly, the same concerns apply in this model, i.e. that the cost of the Openreach database clean-up is unknown and potentially significant, and that these efforts may not be sufficiently effective.



7.39. Hence, the E-NoT & MAC (U) model is similarly limited from the perspective of addressing Switching ETs.

Conclusions

- 7.40. Considering each of the five switching models discussed in this Section, and assuming the recommended additional solutions to address remaining Switching ETs under each model are implemented, we make the following comparative assessment:
- 7.41. The model that delivers the greatest reduction in Switching ETs is LPL-TxC, because the LP identifies the asset to be switched and reliably communicates the identity of this asset to the access operator.
- 7.42. GPL-TxC and GPL-TxC-V will also deliver a very significant reduction in Switching ETs, through use of retail CP address data rather than Openreach address data, standardised address formats and agent interfaces and enhanced line identification via matching against a wider range of customer provided data.
- 7.43. Finally, the E-NoT and E-NoT & MAC (U) model, plus the recommended solutions, would address a large proportion of ETs, including those currently resulting from address-only switches from MPF lines. However, concerns remain about the cost and time required, to retrospectively, and on an ongoing basis, clean up the Openreach database by reconciling it with CP data.
- 7.44. The costs for the switching models and the solutions are given in the following table. Note that the "+ A" represents the unknown total cost for CPs and Openreach to retrospectively remove address data pollution from the Openreach database, and to adjust existing processes such that this address data pollution is no longer created during switching, (as part of the recommended Switching ET solutions).

<u>Switching Erroneous Transfers</u> (10 Year NPC)	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
Basic Switching Model	£40m	£43m	£75m	£19m	£18m
Cost to Address Switching ETs	£0m	£0m	£0m	£3m + A	£3m + A
Total Cost	£40m	£43m	£75m	£22m + A	£21m + A

Figure 15:	10 Year NPC o	f Basic Switchin	a Models.	Switchina ET	solutions and	Total NPC (£m)
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8. WLT ERRONEOUS TRANSFERS

Introduction and Methodology

- 8.1. Following the analysis on Switching ETs, CSMG conducted an analysis into the relationship between the switching models, and erroneous transfers during the working line take-over process, hereafter referred to as "WLT ETs".
- 8.2. The analysis on WLT ETs was similar in nature and structure to that conducted on Switching ETs, with the difference being that the analysis was conducted with the assumption that for each switching model, the solutions recommended to address Switching ETs had already been implemented. The costs for solutions to WLT ETs are therefore incremental to the basic model costs, and the switching ET solution costs.
- 8.3. We considered the cases under which there was WLT ET harm remaining, and identified additional enhancements, also referred to as "solutions", which could proportionally mitigate the remaining WLT ETs.
- 8.4. As with the switching ET analysis, we considered the cost of these solutions for each switch model, and their likely effectiveness.
- 8.5. Finally, therefore, we were able to make an assessment of the overall ability of the switching model, plus the solutions to address Switching ETs, plus a final set of additional solutions to address remaining WLT ET harm, in preventing WLT ETs.

Results

- 8.6. As with Switching ETs, The WLT Erroneous Transfer analysis was conducted in several stages:
 - 1. Review of the root causes of WLT ETs
 - 2. Identification of solutions to WLT ETs

For each model:

- 3. Assessment of the extent that the switching model plus solutions to Switching ETs would address WLT ETs
- 4. Identification of the situations or types of WLT ETs not addressed
- 5. Selection of solutions to address these remaining WLT ETs
- 6. Estimation of the cost of those solutions
- 7. Discussion of the benefit of deploying those solutions
- 8. Summary of how effectively the model, plus all solutions, would address WLT ETs.



- 8.7. In the first stage, we reviewed the root causes of WLT ETs. These are given in the following table. Note that many of these root causes are also root causes of Switching ETs. Note also that some root causes (e.g. Lack of visibility of MPF CLIs) do not apply assuming successful implementation of any of the switching models.
- 8.8. Where a root cause is unique to WLT ETs, as opposed to Switching ETs, it has been indicated in red text. Where a root cause for WLT ETs is similar but slightly different to that of a switching ET, it has been indicated in orange text.

Cause	Description	% of WLT ETs	Causing Parties	Impacted Parties
Wrong address selected	Miskeying, incorrect info input, multiple occupancy of buildings, similar addresses under same post code	> 60%	Inbound end-user GP agent GP systems	Incumbent end-user Inbound end-user LP (of ET "victim") GP
Wrong CLI/line selected	Miskeying, incorrect info input, multiple lines at same address	[Source: WLT Second SWG Offline (Annex	Inbound end-user GP agent GP systems	Incumbent end-user Inbound end-user LP (of ET "victim") GP
Lack of visibility of MPF CLIs	Unable to use CLI to identify line/CLI out of date, forces into reliance on address-based match	1).docx]	Openreach MPF providers	Incumbent end-user Inbound end-user LP (of ET "victim") GP
Incumbent CP fails to contact incumbent end- user	Incumbent CP fails to send letter to incumbent end-user to inform them of unsolicited cease having been received	Unknown.	Incumbent CP	Incumbent end-user Inbound end-user LP (of ET "victim") GP
The incumbent end-user fails to see or act upon incumbent CP notification	Incumbent CP fails to send letter to the incumbent end- user to inform them of unsolicited cease having been received	Unknown.	Incumbent end-user	Incumbent end-user Inbound end-user LP (of ET "victim") GP
"Cancel Other"	Incumbent CP fails to use (correct) process, incumbent end-user loses service despite having responded to letter (whether the incumbent end- user is not involved in move or move has fallen through)	Unknown.	Incumbent CP	Incumbent end-user Inbound end-user LP (of ET "victim") GP
Incorrect Openreach data (a)	Insufficiently granular data or near duplication of addresses can lead to selection of wrong address (e.g. Gamer/Garner)	Unknown, possibly included in the > 60%	Openreach	Incumbent end-user Inbound end-user LP (of ET "victim") GP

Figure 16: Root causes of WLT ETs



Cause	Description	% of WLT ETs	Causing Parties	Impacted Parties
Incorrect Openreach data (b)	Termination points can be incorrectly mapped following missed updates; ceased lines might not be reflected accurately	figure above.		

- 8.9. The WLT process brings additional challenges in switching the correct asset when compared to a switch where there is no home move. During a switch, the end user would often know the CLI, and would easily be able to obtain it. Additionally, the end user is usually familiar with the address format (or range of address formats) for his or her own property.
- 8.10. During WLT, the default assumption is that the inbound end-user is unlikely to have either the CLI of the line to be taken over, or the name of the incumbent end-user.
- 8.11. Obtaining the name of the incumbent end-user may be easier than obtaining the CLI. The name of the incumbent end-user is only relevant in a database model where this information is stored. In a switching model with a central database, where the inbound end-user does know this information, this will help in identifying the correct property, and the line to be switched.
- 8.12. The inbound end-user is unlikely to be able to easily discover the CLI of the line to be taken over. In many cases, contact between the inbound end-user and incumbent end-user might be limited, for example in renting situations, or during a purchase where communication is channelled through solicitors. Where the CLI is not known, and the WLT is proceeding based on address information only, there is a risk of an ET.
- 8.13. In the second stage, we identified potential solutions to WLT ETs. A number of potential solutions were identified. Those which were not reasonable or practical were discarded, such as development of better incentives for CPs to make efforts to limit ETs. The identified solutions are given in the following table.
- 8.14. As before, solutions that are unique to WLT ETs are in red text, and those which are modified versions of solutions to address Switching ETs are in orange text.





Solution Category	Solution	Description	10 Year NPC
Address Fixes	OR Database Cleanup	Correct mismapped network elements, i.e. where Openreach's database does not reflect the actual state of their network. Clean-up address data, particularly duplicate and near duplicate addresses, possibly via reconciliation against known clean(er) data.	Unknown, but potentially significant.
		Would require cooperation between Openreach and retail CPs, and data sharing.	
	Unique address reference via NLPG	Introduce address standards, ideally across the whole industry. The National Land and Property Gazetteer has been mentioned as a potential option. This model involves various governmental and private organisations and includes specific measures to handle multiple occupancies. Dwellings receive a unique, persistent identifier with its own lifecycle. Alternative models should also be investigated; for example, the Royal Mail's PAF data is already widely used. Royal Mail also offer a Multiple Residence product, designed to expand upon PAF and address issues around identification of multiple dwellings behind a single delivery point.	Unknown, but potentially significant.
Process condition tightening	Mandate communication to the incumbent end- user via notification letters	In all cases, where the incumbent CP must post a letter, and where the CP holds relevant contact details, the CP should also send an email to the incumbent end-user to inform them that the line is going to be transferred to another person. Each form of communication should have simple and quick method for the incumbent end-user to cancel the WLT when it has been requested in error. E.g. with email the end-user can click on secure web-link, and with a letter, the end-user can call a direct number, or visit a URL given in the letter.	£3.5m
Customer Provided Information	Mandate that CPs only place a WLT order where there is an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	The CSA should follow best practice in exhausting realistic lines of enquiry to identify the correct line. This could include, for example, asking the customer to provide the CLI of the line in question, or using information about the pending cease of a line. Where the CSA is still unable to determine the correct line to be switched, the CSA should default to using the cease and re-provide process.	£3.2m

Figure 17: Potential Solutions to WLT ETs



Solution Category	Solution	Description	10 Year NPC
Non-DN (i.e. MPF) related enhancements	Generation of MAC for non-DN services (inc. MPF)	Currently, MAC generation requires a CLI. Some NGA services will not necessarily have a CLI. Openreach and other CP systems and processes would require amendment to allow generation of MACs against service identifiers other than CLI.	£1.2m
	Mandate Cancel Other (Voice + BB)	Cancel Other exists as a process for NoT, but some CPs, particularly smaller ones sometimes do not or cannot (owing to lack of automation) respond sufficiently quickly to Cancel Other requests. This solution sees adherence to the Cancel Other process being made mandatory for all CPs.	£3.5m
Cancel Own / Other	Allow Hub to make Cancel Own/ Other request	Instead of the incumbent CP being required to initiate the Cancel Other, the incumbent (or inbound) customer can request cancellation of the unwanted switch from a central system. This system can then inform the relevant parties, including the Access Operator depending on the process design. This solution gives greater auditability to cancellation requests themselves and can, dependent on design, remove the amount of work required from the retail CP.	£33K

8.15. Having identified the potential solutions to Switching ETs in the previous section, we then considered the potential solutions to WLT ETs for each switching model in turn (steps 3 to 8 as indicated under paragraph 8.6).



GPL-TxC

- 8.16. Implementation of the GPL-TxC model is expected to reduce the occurrence of WLT ETs. There are four primary reasons for this reduction:
 - 1. Firstly, during switching, CPs will consult the central Hub database which has been populated from retail CP line and address data. This data is likely to be more accurate than Openreach data simply because a retail CP has an active relationship with its customer, knows the CLI, and knows the service and billing address details.
 - 2. Secondly, CPs will set up standardised interfaces to the Hub, which will in turn return standardised address information, hence there is less likely to be error resulting from variation in systems and data formats between CPs.
 - 3. Thirdly, there are more options for a GP to identify the correct line to be switched, in that the Hub can be queried with customer name, address, post code, CLI, account reference, and the identity of the incumbent CP. This will allow GPs to narrow down the range of possibilities when searching for the correct address (or line within a property), and so the wrong address or line is less likely to be selected.
 - 4. Fourthly, the GPL-TxC model includes a customer cancel system which would enable customers to cancel their switches during the transfer period by calling an automated Customer Cancel system, or a live TPV agent. As the incumbent end-user will be notified prior to the switch, the end-user will have an opportunity to cancel directly with the customer cancel system, preventing an ET from taking place. ETs would be reduced as customers would not have to rely solely on CPs taking action.
- 8.17. Assuming the correct address has been identified by using the incumbent end-user's name and address combination, the only risk is that the wrong line inside the property would be taken over during the WLT. This type of WLT ET creates less harm for consumers, as the customer would still have a working phone line, but may have to switch it to a different line inside the property.
- 8.18. Because the Hub also stores the account name, this would help in reducing the risk of picking the wrong line in the property if there are multiple residents with different lines, e.g. in the case of unofficial flats as created by "slum landlords". Each line should have a different account holder, with a different account name, and so this information would be available to the Hub and to the GP. It is not a given that the inbound end-user will know the name of the incumbent end-user, but in cases where he or she does, the risk of a WLT ET will be reduced.
- 8.19. However, even though ETs during WLT under the GPL-TxC model are unlikely, they are still possible. To "catch" remaining ETs, it is recommended that the enhancement "Mandate communication to the incumbent end-user via notification letters" is included for WLT under GPL-TxC. The cost of this enhancement is £3.5m on a 10 year NPC basis.
- 8.20. In summary, implementation of the GPL-TxC model is likely to address the vast majority of WLT ETs occurring today, for some additional cost beyond the basic model costs itself.



GPL-TxC-V

8.21. As in the case of Switching ETs, there is no difference between the GPL-TxC and GPL-TxC-V model in terms of the level of reduction in WLT ETs, or the costs associated with doing so.

<u>LPL-TxC</u>

- 8.22. The WLT process has not been defined for LPL-TxC. Assuming the WLT process would follow where possible the process defined for a switch, a WLT would proceed as follows: The incumbent end-user would normally cancel service with their existing provider and request a TxC. The incumbent end-user would then pass that TxC to the inbound end-user. The inbound end-user could then identify and take over the new line before moving into the property using WLT.
- 8.23. Hence, the LPL-TxC model is inherently problematic for WLT: it relies entirely on the goodwill of the incumbent end-user to accurately record the second TxC and to pass this to the inbound end-user. One of the problems with the current WLT process is that the inbound end-user struggles to obtain the CLI before moving in. It is even more unlikely that the inbound end-user would successfully be able to obtain the second TxC from the incumbent end-user. The incumbent end-user has no incentive to provide this information reliably, or in a timely manner, and the inbound end-user has fewer options available to obtain the second TxC than he/she would have done in obtaining the CLI.
- 8.24. We therefore do not believe that WLT can function efficiently for consumers as an LPL process. Having reached this conclusion, we proceeded to analyse the WLT process as it is today, but operating in the wider context of the LPL-TxC model.
- 8.25. The issue with an NoT WLT process under LPL-TxC is that it would be no better than it is today, and so no WLT ETs would have been addressed. There is no Hub for better line / address identification and matching, and as no solutions would have been implemented to address Switching ETs under LPL-TxC, there is no additional protection in place against WLT ETs. Hence customers would be at the same risk of incorrect address matching as today.
- 8.26. This leads to the next question on what would be level of investment would be required to mitigate WLT ETs where WLT is NoT under LPL-TxC. There are three obvious candidates, the first of which would be a necessity:
 - 1. The Openreach database clean-up
 - 2. Mandate notification of end users under WLT process (post and email)
- 8.27. Unfortunately, the combined time, effort and cost of these solutions (especially the Openreach database clean-up) may not be proportionate to fixing WLT ETs under LPL-TxC. Given that the LPL-TxC model already effectively addresses Switching ETs, it is questionable whether these enhancements deliver sufficient benefit when weighed against costs.
- 8.28. We therefore conclude that WLT should be left as an NoT process under LPL-TxC, but that no further investment should be committed in order to reduce WLT ETs. Thus there is no additional cost, but there is also no additional gain.



<u>E-NoT</u>

- 8.29. The E-NoT model, plus the solutions recommended to address Switching ETs, brings two important improvements to the WLT process.
- 8.30. Firstly, the Universal visibility of MPF CLI, part of the basic switching model, will allow the inbound end-user and GP to validate the line to be taken over, in those cases where the inbound end-user knows the CLI.
- 8.31. Secondly, the Openreach database clean-up, part of solutions to Switching ETs, will resolve address inconsistencies, and provide a more reliable source of address data to support WLTs. However, it is expected that even after these two improvements, consumer harm resulting from ETs would still remain. This leads to a requirement for further protection against WLT ETs. Two solutions are recommended.
- 8.32. In the first of these, CPs are mandated to only place a WLT order where there is an exact match, having regard to industry best practice guidelines in attempting to identify the correct line. Under this solution, the GP will attempt to identify the correct line using all available tools, and will default to a cease and re-provide process if an exact match is not identified in order to protect consumers from risk of ETs.
- 8.33. The second solution concerns notification of the end user. Currently during a WLT, the best practice guidance states that the incumbent CP should send a letter to the incumbent end-user to confirm that their line is to be taken over. Clearly the occurrence of WLT ETs indicates that this letter sometimes does not reach the attention of the incumbent end-user, which could be for a variety of reasons (end-user away from property, end-user treats letter as spam or ignores letter, post is delayed, CP processes in issuing letter are delayed etc.).
- 8.34. We suggest that incumbent CPs be required to notify the incumbent end-user, by sending a letter or by sending an email if the end-user has consented to email communications. All forms of communication should provide an easy route for the incumbent end-user to Cancel Other the WLT if there has been an error. For example in an email this could simply be a web-link to be clicked on, followed by a simple verification process. Increasing the number of communications channels, and the methods by which the incumbent end-user can take action, would reduce the likelihood that an end-user is incorrectly switched during a WLT.
- 8.35. The total cost of these solutions, on a 10 Year NPC basis, is £6.6m. Ultimately the final decision on whether to implement these solutions depends on the benefit realised by reduction of the remaining WLTs under E-NoT.
- 8.36. Having implemented the E-NoT model, the solutions to address Switching ETs, and the further solutions to address WLT ETs, the model should bring a significant reduction in WLT ETs. It will still not be as good as GPL-TxC, as there is always a risk that the customer / agent will pick the wrong address, but the likelihood of this happening would be greatly reduced from today's processes.



E-NoT & MAC (U)

- 8.37. With regards to WLT ETs, the E-NoT & MAC model is very similar to E-NoT. The results of the analysis are briefly summarised as follows:
 - 1. E-NoT, plus solutions to address Switching ETs, will reduce a large number of WLT ETs.
 - 2. The greatest benefits will be derived from the Universal Visibility of MPF CLI (part of the basic E-NoT model) and the Openreach database clean-up (one of the solutions to Switching ETs).
 - 3. Concerns remain that without the superior line identification provided by the Hub in the GPL-TxC models, there is still an unacceptable risk of WLT ETs in address-only matches.
 - 4. Therefore, it is recommended that the same two solutions to WLT ETs under E-NoT should also be implemented under E-NoT & MAC (U), that is:
 - I. Mandate that CPs only place a WLT order where there is an exact match, having regard to industry best practice guidelines in attempting to identify the correct line
 - II. Mandate notification of incumbent end users by incumbent CPs under WLT process (post and email)
 - 5. The total cost of these solutions is £6.6m on a 10 Year NPC basis. A better understanding of the benefits realised through reduction of WLTs would inform a more precise cost-benefit analysis.
 - 6. Having implemented these solutions, there would be a significant reduction in WLT ETs under E-NoT & MAC (U), but with a small risk that the customer picks the wrong address or line. This would be at a very similar level to that in the E-NoT model.

Conclusions

- 8.38. Considering each of the five switching models discussed in this Section, and assuming the recommended additional solutions to address remaining Switching ETs under each model are implemented, we make the following comparative assessment:
- 8.39. The GPL-TxC and GPL-TxC-V models deliver the greatest reduction in WLT ETs, through the use of retail CP address data rather than Openreach address data, standardised address formats and agent interfaces and enhanced line identification via matching against a wider range of customer provided data. The solution "Mandate communication to the incumbent end-user via notification letters" would provide additional protection against WLT ETs. The E-NoT and E-NoT & MAC (U) models, plus the recommended solutions for Switching ETs, plus the further recommended solutions for WLT ETs, would also significantly reduce WLT ETs. However, a small number of WLT ETs will remain when the



inbound end-user and the GP picks the wrong address or line due to lack of information and address confusion.

- 8.40. The LPL-TxC model does not appropriately address the WLT process. If harmonised as LPL, there is a significant reduction in consumer efficiency as inbound end-users will have to obtain a TxC from the incumbent end-user. If left as NoT, i.e. unharmonised, the number of WLT ETs would not be reduced, and may even increase if the address data pollution in the Openreach database continues to rise unchecked.
- 8.41. The costs for the switching models, the solutions to address Switching ETs, and the solutions to address WLT ETs, are given in the following table.
- 8.42. Note that there is an unknown cost for CPs and Openreach to retrospectively remove address data pollution from the Openreach database and to adjust existing processes such that this address data pollution is no longer created during switching (Switching ET solutions). This is indicated in the following table with "+ A".

Figure 18: 10 Year NPC of Basic Switching Models, Switching ET solutions, WLT ET solutions, and Total (£m)

WLT Erroneous Transfers (10 Year NPC)	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
Basic Switching Model	£40m	£43m	£75m	£19m	£18m
Cost to Address Switching ETs	£0m	£0m	£0m	£3m + A	£3m + A
Cost to Address WLT ETs	£3m	£3m	£0m	£7m	£7m
Total Cost	£43m	£46m	£75m	£29m + A	£28m + A

- 8.43. Note again that the WLT process has not been dealt with satisfactorily under LPL-TxC.
- 8.44. The model with the total lowest "known" costs is E-NoT & MAC (U), at £28m.
- 8.45. The model with the total lowest likely costs is GPL-TxC, at £43m.
- 8.46. Given Openreach / Industry costs for "+ A" are likely to stretch past the £14m difference between the known costs of GPL-TxC and E-NoT, the GPL-TxC model is likely to be the least expensive.
- 8.47. Implementation of the GPL-TxC model would also bring about a significant reduction in Switching ETs (second only to the harmonised LPL models in terms of the extent of this reduction) and the greatest reduction in WLT ETs.



9. CONCLUSIONS

Annualised 10 Year NPC

9.1. The cost analysis on the switching model options shows the 10-Year NPC of transitioning to a new switching process may range from £18m to £75m.

£1.8m

<u>Net Present Cost (£)</u>	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
5 Year NPC	£33m	£35m	£49m	£18m	£14m
10 Year NPC	£40m	£43m	£75m	£19m	£18m

£4.0m

Figure 19: 10 Year Net Present Costs for Basic Switching Models

9.2. Models which bring a greater degree of reliability in switching the correct assets (LPL-TxC, GPL-TxC) incur the greatest cost.

£4.3m

£7.5m

£1.9m

- 9.3. The E-NoT and the E-NoT & MAC (U) models are the least expensive. However, under these models, significant further investment would be required to reduce the occurrence of Switching ETs, as discussed in paragraph 7.34.
- 9.4. Costs resulting from enhancements to records of consent are driven primarily by the requirement for CPs to record sales calls for longer time periods. For Tier A CPs, new systems will be required, whereas for Tier B and C CPs, effort will be required in modifying existing call recording systems at contact centres.

Figure 20:	Record o	of Consent	Industrv	Costs
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<u>Record of Consent</u>	Set up Cost	Ongoing Cost	Net Present Cost (£)	Annualised Per Customer 10 Year NPC	Annualised Per Cust 10 Year NPC as % of Rev
5 Year Timeframe	£4.1m	60.6m	£7m	£0.04	0.01%
10 Year Timeframe	£4.111	EU.BIN	£9m	£0.05	0.02%

- 9.5. Analysis on Erroneous Transfers during switching revealed that further investment is required for the E-NoT and E-NoT & MAC (U) models, but not for LPL-TxC, GPL-TxC and GPL-TxC-V.
- 9.6. The cost of the Openreach database clean-up is a potentially significant unknown cost to address Switching ETs in the E-NoT and E-NoT & MAC (U) models. This unknown cost is indicated by "+ A".



9.7. Costs are given in the following table.

Figure 21.	10 Vear NPC o	f Rasic Switching	n Madels	Switching FT	solutions and	Total NPC (fm)
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<u>Switching Erroneous Transfers</u> (10 Year NPC)	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
Basic Switching Model	£40m	£43m	£75m	£19m	£18m
Cost to Address Switching ETs	£0m	£0m	£0m	£3m + A	£3m + A
Total Cost	£40m	£43m	£75m	£22m + A	£21m + A

- 9.8. Analysis on Erroneous Transfers during WLT revealed that significant further investment would be required under the E-NoT and E-NoT & MAC (U) models to reduce the occurrence of WLT ETs.
- 9.9. Costs are given in the following table.

Figure 22: 10 Year NPC of Basic Switching Models, Switching ET solutions, WLT ET solutions, and Total NPC (£m)

WLT Erroneous Transfers (10 Year NPC)	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
Basic Switching Model	£40m	£43m	£75m	£19m	£18m
Cost to Address Switching ETs	£0m	£0m	£0m	£3m + A	£3m + A
Cost to Address WLT ETs	£3m	£3m	£0m	£7m	£7m
Total Cost	£43m	£46m	£75m	£29m + A	£28m + A

- 9.10. The final cost assessments for each module of analysis have been given in the following table.
- 9.11. With all costs included, and given the scale of potential unknown costs, the least expensive model is almost certainly GPL-TxC.
- 9.12. GPL-TxC is also the second best model for reducing Switching ETs after LPL-TxC, and the best model for reducing WLT ETs.

Figure 23: **10 Year NPC of Basic Switching Models, Record of Consent, Switching ET solutions, WLT ET** solutions, and Total NPC (£m)

<u>10 Year NPC</u>	GPL-TxC	GPL-TxC-V	LPL-TxC	E-NoT	E-NoT & MAC (U)
Basic Switching Model	£40m	£43m	£75m	£19m	£18m
Record of Consent	£9m	£9m	n/a	£9m	£9m
Cost to Address Switching ETs	£0m	£0m	£0m	£3m + A	£3m + A
Cost to Address WLT ETs	£3m	£3m	n/a	£7m	£7m
Total Cost of Switching Model	£52m	£55m	£75m	£38m + A	£37m + A



SECTION II: EVALUATION OF PHASED MIGRATION TO NEW SWITCHING MODEL

10. INTRODUCTION AND METHODOLOGY

- 10.1. In the previous engagement detailed in Section I, Ofcom engaged CSMG to create specification documents and to develop cost assessments for a set of consumer switching options as part of a larger review of switching processes in the UK communications sector.
- 10.2. In this previous engagement, CSMG provided specifications and cost assessments for implementation of various switching models, including GPL-TxC-V (a hub and database model), an enhanced NoT model (harmonised to the NoT switching process), and an enhanced NoT and MAC model (not harmonised across switching processes). At the conclusion of this engagement, CSMG presented cost analysis for transitioning to one of these new switching models over a 10 year time frame (detailed in Section 9).
- 10.3. Ofcom reviewed the costs provided by CSMG as a basis for evaluating various switching models, comparing switching models based on potential benefits to consumers and total cost to industry.
- 10.4. Following this review, Ofcom re-engaged CSMG in 2013, to produce a detailed cost breakdown of the Enhanced NoT (E-NoT) model. Ofcom also requested that CSMG estimate the level of cost wastage for each of the components of the E-NoT model, if this component were to be implemented in the short term, and thereafter industry were to move to a database model such as GPL-TxC. CSMG provided this analysis to Ofcom, which identified a further switching model, NoT+, and requested that CSMG provide a technical specification and costs for this model.
- 10.5. The detailed activities described in Section II of this report thus proceeded as follows:
- 10.6. First, CSMG providing a detailed cost breakdown for the E-NoT model (detailed in Section 11.4). In this section, the term "E-NoT" refers to a switching model that includes the basic E-NoT switching model (detailed in Section 3.12), the Record of Consent (detailed in Section 6), and solution(s) to Erroneous Transfers occurring during switching and Working Line Takeover (detailed in Sections 7 and 8 respectively).
- 10.7. Ofcom sought to understand the total cost to industry associated with a near-term implementation of a future, as yet unknown harmonised NoT model. This model would contain a subset of the enhancements of E-NoT.
- 10.8. Thus, Ofcom requested that CSMG provide both:
 - 1. A full cost breakdown of the individual elements of the E-NoT model; and
 - 2. An estimate of the wasted cost for each element of E-NoT that would result if it were implemented in the near-term and industry then subsequently were to move to a database model such as GPL-TxC.
- 10.9. Ofcom reviewed CSMG's estimation of the detailed costs for individual elements of the E-NoT model and the cost wastage analysis.



- 10.10. In the course of this review, Ofcom sought to identify those enhancements which it considered appropriate to proceed with in the short term. In doing so, one consideration was the potential for wasted costs in the event that, over the long term, it decided to progress to a GPL TxC solution in the future.
- 10.11. Of com therefore asked CSMG to provide Net Present Costs for 2 and 3 year timeframes, as well as the 10 year timeframe in line with the rest of CSMG's cost assessment.
- 10.12. The shorter term NPCs were relevant in understanding the impact on industry where a cost might be wasted. With that said, the instances where these shorter term NPCs apply are limited, as Ofcom has sought to minimise cost wastage.
- 10.13. However, for the sake of completeness, the 2, 3 and 10 Year NPCs for each enhancement of the E-NoT model have been included in this report.
- 10.14. Having identified the enhancements which could quickly deliver benefits to consumers while minimising costs to industry (and in particular, in the case of a subsequent database model), Ofcom grouped this set of enhancements into a new model, called NoT+.
- 10.15. Ofcom then requested that CSMG provide detailed specifications and cost estimates for the new NoT+ model.
- 10.16. In Section II are thus presented the following: The detailed cost breakdown of E-NoT into its constituent elements, the cost wastage analysis, a description of the NoT+ model, and a high level specification and cost estimates for NoT+.



11. DETAILED E-NOT COST ANALYSIS

- 11.1. CSMG was engaged to provide:
 - 1. Detailed cost analysis of the components of E-NoT; and
 - 2. Estimates of the level of cost wastage that industry would incur in a transition from a harmonised NoT model to a database model such as GPL-TxC.
- 11.2. Ofcom requested a detailed breakdown of the costs of E-NoT in the following components:

Basic E-NoT model:

- 1. Harmonization to GPL by removing the LPL (MAC) switching process for broadband;
- 2. Provision of better information on the implications of switching;
- 3. Mandatory use of Sim Provide functionality to help address some of the problems around loss of service when switching bundles of fixed voice and broadband services;
- 4. Ensuring MPF CLI visibility; and
- 5. Mandating the use of the Cancel Other process (separately for voice and broadband).

Record of Consent:

6. Record of Consent to protect against slamming.

Solution(s) to Switching ETs:

- 7. Openreach database clean-up²⁰;
- 8. Mandate that CPs only place a NoT order where there is an exact match, having regard to industry best practice guidelines in attempting to identify the correct line

Solution(s) to WLT ETs:

- 9. Mandate communication to the incumbent end-user via notification letters; and
- 10. Mandate that CPs only place a WLT order where there is an exact match, having regard to industry best practice guidelines in attempting to identify the correct line
- 11.3. CSMG provided estimates of the costs corresponding to each of the elements of E-NoT listed above using the same net present cost (NPC) methodology discussed in Section 1.19. NPC was calculated for 2, 3 and 10 year timeframes. The results are presented in the following table.

²⁰ As described in Section I, there is no clear view on the scale of the costs to Openreach and CPs for the database clean-up. The unknown cost is indicated as "A".



			E-NoT Modular Costs			
<u>Category</u>	<u>E-NoT Cost Component</u>	2 Year NPC	3 Year NPC	10 Year NPC		
	Harmonization of GPL by removing the LPL MAC switching process	£9.5m	£8.7m	£3.7m		
	Provision of better information on the implications of switching	£1.0m	£1.1m	£1.8m		
	Mandate Sim Provide functionality	£1.9m	£2.2m	£3.7m		
Basic E- NoT	Ensuring MPF CLI visibility	£2.2m	£2.4m	£4.1m		
	Mandate use of the Cancel Other process (Voice)	£0.3m	£0.3m	£0.5m		
	Mandate use of the Cancel Other process (Broadband)	£2.5m	£2.8m	£4.8m		
	Total Basic E-NoT	£17.3m	£17.5m	£18.7m		
Record of Consent	Record of consent to protect against slamming	£5.3m	£5.8m	£9.2m		
	Openreach database clean-up	А	А	А		
Solutions to Switching ETs	Mandate that CPs only place NoT order where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	£1.6m	£1.9m	£3.2m		
	Total Cost to Address Switching ETs	£1.6m + A	£1.9m + A	£3.2m + A		
	Mandate communication to the incumbent end- user via notification letters	£1.1m	£1.4m	£3.5m		
Solutions to WLT ETs	Mandate that CPs only place a WLT order where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	£1.6m	£1.9m	£3.2m		
	Total Cost to Address WLT ETs	£2.7m	£3.3m	£6.6m		
E-NoT	Basic E-NoT + Record of Consent + Cost to Address to Switching ETs & WLT ETs	£27.0m + A	£28.5m + A	£37.7m + A		

Figure 24: 2 Year, 3 Year, and 10 Year NPC of E-NoT (£m)

11.4. Costs for the initial review of E-NoT, including the basic E-NoT model, Record of Consent measures, and ET analyses are summarised above. The cost of these measures under E-



NoT on a 10 Year NPC basis was estimated at \pm 37.7m. Unknown costs are indicated by "+A", and are discussed in further detail in later paragraphs.

- 11.5. The E-NoT enhancement representing the greatest cost to industry varies in the short and long-term.
- 11.6. Harmonisation to a GPL process has high set up costs, requiring upfront changes across multiple systems to decommission the MAC process. At the same time, harmonisation also leads to a reduction in call handling time, which decreases ongoing costs. Thus, short-term costs for harmonisation to GPL are high relative to other E-NoT components (2 year NPC = ~£10m), but long-term costs are comparable to other E-NoT components (10 year NPC = ~£4m).
- 11.7. Harmonisation to GPL also drives significant costs to Openreach, estimated at £2.5m for setup and £0.5m ongoing. This harmonisation cost includes Openreach costs to implement Cancel Other processes for broadband.
- 11.8. Record of Consent drives significant cost, including call recordings for telesales, written records for retail/shop and doorstep selling, and capture of information during an online order. Taken in aggregate, these represent a 10 year net present cost of £9m.
- 11.9. The remaining E-NoT components have similar costs, most falling within the £3m to £4m range on a 10 year NPC basis.
- 11.10. Analysis of Erroneous Transfers resulting from switching and working line takeovers against the E-NoT switching model revealed the E-NoT model could require additional investment to limit ETs.
- 11.11. Costs relating to CPs only placing orders where they have an exact match and, having regard to industry best practice guidelines to ensure correct lines are switched can be incurred for both Switching and WLT ETs. If best practice is introduced for both switching and WLT, both of the respective costs in the above table would need to be included.



12. COST WASTAGE ANALYSIS

12.1. For each of the elements of E-NoT, CSMG also provided an assessment of whether the costs involved would be wasted were industry to move to a database model such as GPL-TxC to be required in the future. Where costs were found to be wasted, CSMG provided analysis of the costs which might be incurred by CPs in the interim period. Wasted cost estimates for the interim period were calculated using an NPC of each element over a shorter time period – 2 and 3 years. Results of the analysis are given in the following table.

		E-NoT Cost Wastage			
<u>Category</u>	E-NoT Cost Component	% Wasted Cost	2 Year NPC	3 Year NPC	
	Harmonization of GPL by removing the LPL MAC switching process	20%	£1.9m	£1.7m	
	Provision of better information on the implications of switching	0%	£0.0m	£0.0m	
	Mandate Sim Provide functionality	20%	£0.4m	£0.4m	
Basic E-NoT	Ensuring MPF CLI visibility	100%	£2.2m	£2.4m	
	Mandate use of the Cancel Other process (Voice)	100%	£0.3m	£0.3m	
	Mandate use of the Cancel Other process (Broadband)	100%	£2.5m	£2.8m	
	Total Basic E-NoT	42%	£7.2m	£7.7m	
Record of Consent	Record of consent to protect against slamming	0%	£0.0m	£0.0m	
	Openreach database clean-up	Unknown	N/A	N/A	
Solutions to Switching ETs	Mandate that CPs only place NoT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	100%	£1.6m	£1.9m	
	Total Cost to Address Switching ETs	100%	£1.6m + A	£1.9m + A	
	Mandate communication to the incumbent end- user via notification letters	0%	£0.0m	£0.0m	
Solutions to WLT ETs	Mandate that CPs only place WLT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	100%	£1.6m	£1.9m	
	Total Cost to Address WLT ETs	60%	£1.6m	£1.9m	

Figure 25: 2 Year and 3 Year Cost Wastage of E-NoT (£m)



E-NoT Basic E-NoT + Record of Consent + Cost to Address Switching ETs & WLT ETs 39%	£10.5m + A	£11.4m + A
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^{12.2.} Costs incurred in the setup or maintenance of E-NoT components that are not reusable in a transition from a harmonised NoT model to a database model such as GPL-TxC were considered wasted.

- 12.3. CSMG identified three categories of wasted costs:
 - 1. Completely wasted Costs incurred in the set up or maintenance of the harmonised NoT model are non-transferrable in a subsequent transition to a database model, and thus are 100% wasted. This indicates that the systems and processes that were developed or modified for an interim harmonised NoT model cannot be re-used in a subsequent database model. In addition, any employee training or documentation that took place was for systems or processes that would be obsolete under a database model.
 - 2. Partially wasted Costs incurred in the set up or maintenance of the harmonised NoT model are somewhat transferrable in a subsequent transition to a database model. Some of the systems and processes, and related employee training and documentation, are re-used in a subsequent database model. In this analysis, the partially wasted costs were all 20% wasted. This estimate was based on the assumption that cost wastage was primarily driven by costs associated with testing in the initial setup of the harmonised NoT model.
 - 3. Not wasted Costs incurred in the set up or maintenance of the harmonised NoT model are completely transferrable in a subsequent transition to a database model, and thus are 0% wasted. This indicates that the systems and processes that were set up for an interim harmonised NoT model continue to be used in a subsequent database model. In addition, employee training and documentation related to the initial implementation of the harmonised NoT model continue to be relevant for the subsequent database model.
- 12.4. As in earlier sections of this report, there is an unknown cost for retail CPs and Openreach to reconcile address databases, retrospectively remove address data pollution in the Openreach database, and modify existing processes to prevent future address data pollution, indicated by "+ A". While this element is part of the full E-NoT model, it is an unknown cost, and therefore the level of cost wastage cannot be estimated
- 12.5. Based on the above assumptions, CSMG estimates on average 39% of costs would be wasted in a transition from an interim harmonised NoT model to a database model. Cost wastage on a 2 year and 3 year NPC had a base of £10.5m and £11.4m respectively.



13. NoT+ (MODEL DESCRIPTION AND COSTS)

- 13.1. Following a review of CSMG's cost analysis as presented above, Ofcom identified those elements of E-NoT which could deliver benefits to consumers quickly at minimal cost under a harmonised NoT model. As one of the potential options for a GPL switching process is a database solution, Ofcom sought to understand the extent to which costs might be wasted if some E-NoT enhancements were implemented on a short term basis (2-3 years). As this model is a subset of the full E-NoT model, Ofcom termed it "NoT+".
- 13.2. Having reviewed CSMG's cost analysis as presented above, Ofcom sought to identify a further switching model option which would fulfil two objectives:
 - 1. To harmonise voice and broadband to the NoT process
 - 2. To identify enhancements to the NoT process which would deliver benefits to consumers
- 13.3. As one of the harmonised GPL options is a database switching model, a consideration of Ofcom's has been the extent to which costs might be wasted If Ofcom were to subsequently require a database model.
- 13.4. Where costs might be wasted, Ofcom has considered whether it might also be proportionate for industry to incur costs as a result of the consumer benefits in the interim period (2-3 years).
- 13.5. The result of Ofcom's analysis is thus a harmonised NoT model consisting of an optimal set of E-NoT components which would deliver immediate benefit to consumers while minimizing the cost impact to industry.
- 13.6. As with E-NoT, NoT+ is an incremental model where switches for broadband are carried out under a Notification of Transfer (NoT) process, instead of the existing broadband MAC process. As voice services continue to be switched under NoT, both voice and broadband are now switched under a NoT process, and the model is thus "harmonised".
- 13.7. The NoT+ switching process performs authentication and Record of Consent via existing methods with the gaining communications provider (GP), albeit harmonised to remove the necessity of MAC for broadband service and the inclusion of the Cancel Other process for switching broadband service.
- 13.8. The NoT+ model specified by Ofcom is based on a subset of E-NoT components. Components of NoT+ and rationale for inclusion are given below:





<u>Category</u>	<u>E-NoT Cost Element</u>	Included in NoT+	<u>Reason for Inclusion/Exclusion in</u> <u>NoT+ Model</u>
	Harmonisation of GPL by removing the LPL MAC switching process	Yes	Included despite some wasted costs as harmonisation of switching processes is expected to deliver significant benefits to consumers.
	Provision of better information on the implications of switching	Yes	Included because there are no wasted costs and consumer benefits outweigh implementation costs.
Basic E- NoT	Mandate Sim Provide functionality	Yes	Included despite some wasted costs because it addresses problems of loss of service and ease of consumer switching.
	Ensuring MPF CLI visibility	No	Excluded given the recent introduction of the MPF Help Line and the lack of data on how many MPF- related erroneous transfers remain.
	Mandate the use of Cancel Other (Voice and Broadband)	No	Excluded because fully wasted cost.
Solutions to Switching ETs	Openreach database clean-up	No	Excluded because it is not clear what the database clean-up process exactly involves, and thus costs cannot be quantified.
	Mandate that CPs only place NoT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	No	Excluded because fully wasted cost and recent introduction of best practice (which includes MPF help line) may help to address large proportion of switching ETs if widely adopted by CPs.
Solutions	Mandate communication to the incumbent end-user via notification letters	Yes	Included as no wasted costs. Also in future database model to mirror protections for switching within WLT.
Solutions to WLT ETs	Mandate that CPs only place WLT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	Yes	Included despite wasted costs as consumer benefits outweigh implementation costs
Record of Consent	Record of Consent to protect against slamming	Yes	Included because there are no wasted costs and consumer benefits outweigh implementation costs.

Figure 26: Cost Components of NoT+



A high level process flow and short summary of the NoT+ process is given below. CSMG has produced a detailed specification for NoT+ in a separate document.



Figure 27: NoT+ – High-Level Process Diagram

- 13.9. At the start of the sales process, the Gaining Communications Provider (GP) will make a Dialogue Services type call to the Access Operator (AO), which may be via a Wholesale Communications Provider (WCP).
- 13.10. When services are provided over MPF, the AO may obtain further information of the services from MPF LP via the MPF Helpline.
- 13.11. Asset validation for both voice and broadband is performed using the AO Dialogue Services. Asset validation for WLR lines and MPF Helplines is unchanged.
- 13.12. It is expected that asset identification and validation would occur in real-time while the customer is on the call with the agent or online. Therefore the GP must be able to correctly identify the customer's line during the call.
- 13.13. Back-end inter-CP switching processes are expected to be mostly unchanged, apart from the mandated use of Sim Provide functionality to ensure that bundled services switch on the same day.



NoT+ Detailed Costs

13.14. Based on Ofcom's definition of the NoT+ model, the setup and ongoing costs for each component of Basic NoT+, Solutions to WLT ETs, and Record of Consent, are given in the following table:

<u>Category</u>	<u>E-NoT Element</u>	Setup Cost	Ongoing Cost
	Harmonisation of GPL by removing the LPL MAC switching process	£11.2m	-£0.9m
Basic NoT+	Provision of better information on the implications of switching	£0.7m	£0.1m
	Mandate Sim Provide functionality	£1.4m	£0.3m
Record of Consent	Record of consent to protect against slamming	£4.1m	£0.6m
	Mandate communication to the incumbent end- user via notification letters	£0.4m	£0.4m
Solutions to WLT ETs	Mandate that CPs only place WLT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	£1.2m	£0.2m
NoT+	NoT+ Total NoT+ Enhancements		£0.7m

Figure 28: Setup Costs and Ongoing Costs of NoT+ (£m)

13.15. Net Present Costs for 2, 3, and 10 year timeframes are given in the following table.



<u>Category</u>	<u>E-NoT Element</u>	2 Year NPC	3 Year NPC	10 Year NPC
Basic NoT+	Harmonisation of GPL by removing the LPL MAC switching process	£9.5m ²¹	£8.7m	£3.7m
	Provision of better information on the implications of switching	£1.0m	£1.1m	£1.8m
	Mandate Sim Provide functionality	£1.9m	£2.2m	£3.7m
Record of Consent	Record of consent to protect against slamming	£5.3m	£5.8m	£9.2m
Solutions to WLT ETs	Mandate communication to the incumbent end-user via notification letters	£1.1m	£1.4m	£3.5m
	Mandate that CPs only place WLT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	£1.6m	£1.9m	£3.2m
NoT+	Total NoT+ Enhancements	£20.4m	£21.1m	£25.1m

Figure 29: 2 Year, 3 Year, and 10 Year NPC of NoT+ (£m)

69

13.16. On the basis of a 10 year NPC, record of Consent accounts for the largest portion of costs, followed by mandating of the Cancel Other process for broadband, and harmonisation of GPL by removing the LPL MAC switching process.





²¹ For the "Harmonisation of GPL by removing the LPL MAC switching process" enhancement, the shorter term NPs are greater than the long term NPC. A harmonized model has less ongoing cost than an unharmonised, due to switches requiring less CSA call handling time.

14. CONCLUSIONS

- 14.1. The total cost of E-NoT under a 10-Year NPC is £38m, plus additional unknown implementation costs for Openreach.
- 14.2. Cost wastage analysis of E-NoT components estimated 39% of the costs of E-NoT would be wasted in a transition from an interim NoT+ model to a database model.
- 14.3. Costs for ensuring MPF CLI visibility, mandating Cancel Other for broadband exact match for line switching were 100% wasted. Costs for harmonisation to GPL and mandating of Sim Provide functionality were 20% wasted, driven by testing. Costs for provision of better information on the implications of switching and notification of end users under WLT process were 0% wasted, as these were costs for elements which would most likely be included under a future database model such as GPL-TxC.
- 14.4. Ofcom reviewed the cost analysis for E-NoT and identified a set of E-NoT components, to include in an interim harmonised NoT model. This model was termed "NoT+".
- 14.5. The elements of NoT+ are given as follows:
 - 1. Basic NoT+
 - i. Harmonisation of GPL by removing the LPL MAC switching process
 - ii. Provision of better information on the implications of switching
 - iii. Mandate Sim Provide functionality to address loss of service issues
 - 2. Solutions to WLT ETs
 - iv. Mandate communication to the incumbent end-user via notification letters
 - v. Mandate that CPs only place WLT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line
 - 3. Record of consent to protect against slamming
- 14.6. The total 10 year NPC for NoT+ was estimated at £25.1m.



15.ANNEX 1: SWITCHING MODEL COST BREAKDOWN

15.1. In this Section, a breakdown of CSMG's cost estimates for a Tier C CP is provided. Each component of the CP's systems and processes was broken down using the TM Forum eTOM and TAM frameworks. For set-up costs, an estimate based on development time, infrastructure costs, and CSA training time was used for each of the switching models. An operating to capital expenditure ratio of 20% was used to estimate the ongoing costs to support and maintain new systems and processes. For order handling costs the difference in total order handling time was used to derive the ongoing costs.

GPL-TxC Model

- 15.2. For the GPL-TxC model, updates to CRM systems to include the TxC functionality introduce the greatest set-up cost. Service and Customer Order Management update costs are the second and third largest costs. CIM changes to support Hub look-up functionality and the TxC are also significant.
- 15.3. In terms of ongoing costs, the Order Handling represents the largest cost driver. Moving to a fully NoT process results in customers not having to call their LP to obtain a MAC, and the removal of associated CSA cost is a major benefit to ongoing costs.



Figure 30: GPL-TxC: Tier C Set-up and Ongoing Cost Breakdown

GPL-TxC Virtual Model

15.4. For the GPL-TxC-V model, updates to CRM systems to include the TxC functionality introduce the greatest set up cost. Service and Customer Order Management update costs



are the second and third largest costs. CIM changes to support Hub lookup functionality and the TxC process are also significant. The major addition in the GPL-TxC-V model is the additional amount of effort required to develop more complex interfaces to the Hub, shown in the increased costs for Partner Management Changes.

15.5. In terms of ongoing costs, the Order Handling represents the largest cost driver. Moving to a fully NoT process results in customers not having to call their LP to obtain a MAC, and the removal of associated CSA cost is a major benefit to ongoing costs. Ongoing costs associated with maintaining Partner Management Changes are also increased in comparison to the GPL-TxC model.



Figure 31: GPL-TxC-V: Tier C Set-up and Ongoing Cost Breakdown

Enhanced NoT (Harmonised) Model

- 15.6. For the Enhanced NoT (Harmonised) model, the major cost driver is training for CSAs to use updated CIM systems, and to deal with the many extra enhancements specified in the model. Additionally CSAs must be trained on the removal of the MAC process. Costs are also incurred through deactivating MAC through the order stack.
- 15.7. In terms of ongoing costs, the Order Handling represents the largest cost driver. Moving to a fully NoT process results in customers not having to call their LP to obtain a MAC, and the removal of associated CSA cost is a major benefit to ongoing costs.




Figure 32: E-NoT: Tier C Set-up and Ongoing Cost Breakdown

Enhanced NoT & MAC (Unharmonised) Model

- 15.8. For the Enhanced NoT and MAC (Unharmonised) model, the most significant cost is in modifying customer interface systems to cope with enhancements to Sim Provide functionality, Cancel Other and call recording. Sim Provide functionality and Cancel Other also impact the order stack.
- 15.9. In terms of ongoing costs, the Enhanced NoT & MAC benefits from a relatively small (in comparison to other models) decrease in order handling time, as a result of the dedicated customer MAC line. Other costs reflect ongoing maintenance to support system changes.





Figure 33: E-NoT & MAC (U): Tier C Set-up and Ongoing Cost Breakdown



s22
5

Market Size Assumptions

	Assumption	Source
Fixed Line OR residential customers	19.4m ²³	http://stakeholders.ofcom.org.uk/binaries/research/cmr/Q4_2010. pdf p9 (Q4 2010)
Annual Switches	2.7m	Ofcom analysis based on BT Openreach data(2013)
NoT as % of Total	75%	Ofcom 2010 consumer research
MAC as % of Total	7%	Ofcom 2010 consumer research
C&R as % of Total	18%	Ofcom 2010 consumer research
Annual WLTs	544k	BT Openreach (2012)
SME companies with Fixed Line	0.67m	Ofcom, Sample Answers
SME companies with Broadband Lines	0.58m	Ofcom, Sample Answers
Broadband OR customers (inc. SME)	15.4m	http://stakeholders.ofcom.org.ukbinaries/research/cmr/Q4_2010. pdf p16 (Q4 2010)
CPS only customers	2.8m	<u>http://www.offta.org.uk/updates/otaupdate20110802.htm</u> (July 2011)
Fixed line churn	6%	<u>http://stakeholders.ofcom.org.uk/binaries/research/consumer-</u> <u>experience/tce-10/TCE10_Empowerment.pdf</u> figure 122 (2010)
Broadband churn	6%	<u>http://stakeholders.ofcom.org.uk/binaries/research/consumer-</u> experience/tce-10/TCE10_Empowerment.pdf figure 122 (2010)
CPS only churn	6%	Assumes same as Fixed and Broadband
% Bundle including fixed line and BB	44%	<u>http://stakeholders.ofcom.org.uk/market-data-</u> <u>research/statistics/?a=0</u>
Bundle churn	9%	<i>Ofcom consumer experience 2010 (adjusted to exclude switching to or from Virgin Media)</i>
SME Fixed Churn	11%	Ofcom 2010 Switching Report
SME Broadband Churn	8%	Ofcom 2010 Switching report
SME Bundle switch %	9%	Assumes same as consumer

²² Not all of the input assumptions in this section have been updated since the original 2010 report. Apart from the number of switches, which is a key driver of cost, we have sought to maintain consistency with previous estimates to the extent possible by not updating. ²³ Number of fixed residential lines minus the number of Virgin Media residential lines at Q4 2010.



# of Tier A CPs (100 < 10k lines)	287	Ofcom
# of Tier B CPs (10k to 1m lines)	10	CSMG estimate
# of Tier C CPs (1m+ lines)	4	Ofcom
# of TPIs	5	CSMG estimate
# of Wholesale Providers	[⊁]	CSMG estimate
# of Access Providers	[⊁]	CSMG estimate

General CP Sensitivities (For Independent Method and Central Costs)²⁴

Sensitivities	Low	Mid	High
Day-rate for developer	£400	£500	£550
Training per CSA day	£400	£500	£550
FTE Cost per year	£40,000	£60,000	£70,000
Opex to Capex ratio	15%	20%	25%
Cost per CSA minute	£0.20	£0.36	£0.52
TPV fee per call	£2.00	£2.70	£3.30
TPV fee for online	£0.25	£0.50	£0.75
TPV fee for customer cancel	£0.54	£1.08	£1.62
% of switches through customer cancel	5%	7%	10%

Market Channel Assumptions (For Independent Method Costs)²⁵

% Telephone	60%
% Online	20%
% Retail	10%
% Door to Door	10%

 ²⁴ Based on CSMG estimates. High cases and low cases represent reasonable assumptions given range of industry benchmarks.
²⁵ Based on weighted average of sample of CP responses.



General CP Assumptions

Current	Call	time	blend	(Gaining	and	11 18 mins
Losing p	rovide	er)				14.40 111115

	Tier A	Tier B	Tier C
Size of customer base	15,000	300,000	5.5m
Switching customers as % of base	9.0%	9.0%	9.0%

Process Assumptions²⁶

	GPL-TxC		GPL-TxC Virtual			E-NOT (H)			E-MAC (H) ²⁷			E-NOT & MAC (U)			
		Tier			Tier		Tier			Tier			Tier		
	А	В	С	А	В	С	А	В	С	А	В	С	А	В	С
# of CSAs to be trained*	5	100	1,500	5	100	1,500	5	100	1,500	5	100	1,500	5	100	1,500
# of training days for CRM	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1
# of training days for CIM	1	1	1	1	1	1	4	3	3	1	1	1	1	1	1
# of process documentation days for CRM	0	16	30	0	16	30	0	0	0	0	16	30	0	16	30
# of process documentation days for CIM	0	16	30	0	16	30	0	52	95	0	5	10	0	5	10
Gaining call handling time (mins)	12	12	12	12	12	12	12	12	12	12	12	12	12 minutes GP time for *all* switches		ime for les
Losing call handling time (mins)	0	0	0	0	0	0	0	0	0	5	5	5	5 min *on	utes LP ti ly* broad switches	me for band



 ²⁶ CSMG estimates
²⁷ Note that E-MAC was not discussed in the main body of the report, but for convenience, the assumptions underlying the model are presented here.

*Note the number of CSAs to be trained was reduced for Tier C CPs to take into account economies of scale when training large numbers of CSAs.

Because the E-NoT and MAC (U) model is the only unharmonised model, the GPL and LPL call times must be calculated separately for voice and broadband. The Unharmonised model benefits from enhancements to the MAC process, primarily the dedicated MAC line, which will reduce the length of calls to the LP. This only applies for broadband-only switches, and only when moving to WLR (not when moving to MPF, which is a fully NoT process).



System Assumptions²⁸

		GPL-TxC		GPL	-TxC Vir	tual	E	-NOT (H)	E-	MAC (H)	²⁹ E-NOT		DT & MA	C (U)
		Tier			Tier		Tier			Tier			Tier		
	А	В	С	А	В	С	А	В	С	А	В	С	А	В	С
# of days for delivery of CRM system changes	2	165	460	3	205	540	0	0	0	0	0	35	0	0	35
Additional hardware required for CRM changes (£)	0	20,000	50,000	0	20,000	50,000	0	0	0	0	0	0	0	0	20,000
Additional hardware required for Billing changes (£)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days for delivery of COM system changes	0	150	300	0	150	300	0	100	160	0	80	180	2	10	80
Additional hardware required for COM (f)	0	20,000	50,000	0	20,000	50,000	0	0	0	0	40,000	70,000	0	40,000	70,000
Days for delivery of SOM system changes	0	60	400	0	60	400	0	55	100	0	45	210	0	25	90
Additional hardware required for SOM (£)	0	10,000	40,000	0	10,000	40,000	0	0	0	0	10,000	40,000	0	10,000	40,000
Days for delivery of Partner Management system changes	0	80	150	0	120	200	0	115	255	0	75	260	0	40	120
Additional hardware required for Partner Management (£)	0	0	0	0	10,000	20,000	0	0	0	0	0	0	0	0	0
Days for delivery of CPM system changes	0	70	150	0	70	150	0	0	0	0	66	130	0	20	40
Additional hardware required for CPM (£)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days for delivery of SPM system changes	0	20	60	0	20	60	0	0	0	0	48	97	0	20	60
Additional hardware required for SPM (£)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Days for delivery of Customer Self Mgt system changes	0	60	120	0	60	120	0	150	270	0	100	160	0	100	160
Additional hardware required for Customer Self Mgt (£)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



²⁸ CSMG estimates. Tier B SOM and SPM costs are expected to be significantly lower than Tier C, as a large proportion of this cost will be

²⁹ Note that E-MAC was not discussed in the main body of the report, but for convenience, the assumptions underlying the model are presented here.

	GPL-TxC			GPL-TxC Virtual			E-NOT (H)			E-NOT & MAC (U)		
		Scenario			Scenario			Scenario			Scenario	
	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High
# of days for delivery of Hub / TxCIA system	2,000	2,250	2,500	2,400	2,800	3,150	N/A	N/A	N/A	N/A	N/A	N/A
Infrastructure costs (£ '000)	350	750	1,000	300	650	950	N/A	N/A	N/A	N/A	N/A	N/A
On-going infrastructure support costs	10%	20%	20%	10%	20%	20%	N/A	N/A	N/A	N/A	N/A	N/A
# of staff in the Hub / TxCIA	10	16	22	12	18	24	N/A	N/A	N/A	N/A	N/A	N/A
% utilisation of staff in Hub / TxCIA	100%	100%	100%	100%	100%	100%	N/A	N/A	N/A	N/A	N/A	N/A
Days to develop initial documentation, training, processes etc. for Hub / TxCIA	10	10	15	10	10	15	N/A	N/A	N/A	N/A	N/A	N/A
# of days for delivery CCS system	400	500	550	400	500	550	N/A	N/A	N/A	N/A	N/A	N/A
Infrastructure costs for CCS (£)	100,0 00	125,0 00	150,0 00	100,0 00	125,0 00	150,0 00	N/A	N/A	N/A	N/A	N/A	N/A
CCS on-going costs %	20%	20%	20%	20%	20%	20%	N/A	N/A	N/A	N/A	N/A	N/A
# of staff in CCS	3	3	5	3	3	5	N/A	N/A	N/A	N/A	N/A	N/A
% utilisation of staff in CCS	50%	50%	50%	50%	50%	50%	N/A	N/A	N/A	N/A	N/A	N/A
Days to develop initial documentation, training, processes etc. for CCS	10	10	15	10	10	15	N/A	N/A	N/A	N/A	N/A	N/A

<u>Central Cost Assumptions and Sensitivities</u>³⁰

³⁰ CSMG estimates. High cases and low cases represent reasonable assumptions given range of industry benchmarks.



17.ANNEX 3: OTHER ASSUMPTIONS

The assumptions in the following tables are CSMG's own, inputs from industry and industry benchmarks.

Record of Consent

		Tier	
	А	В	С
License Fee for Call Recording (per seat)	275	N/A	N/A
Days for set-up of Call Recording	6	50	100
Additional Hardware Cost	2,000	20,000	50,000
CSAs to be trained	5	100	1,500
Days for modification to online ordering systems	0	2	5
Process documentation days	1	1	1

Switching Erroneous Transfers ("Switching ETs")

			Tier	
Solution	Assumption	А	В	С
OR Database Clean up	Unknown / Not Costed		n/a	
Unique address reference via NLPG	Unknown / Not Costed		n/a	
Mandate that CPs only place NoT orders where	Man Days to Update CIM	0	60	100
they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	CSA Training Days	2.5	50	750
Gen of MAC for non DN	Man Days to set-up MPF provider interface to Openreach	n/a	n/a	75
services (inc. MPF)	CSA Training Days	n/a	n/a	1,500
Mandate Cancel Other	Man Days to Update CIM	0	16	30
(Voice + BB)	CSA Training Days	10	100	1,500



Allow Hub to make Cancel Own / Other	Man Days for Additional Design and Testing	25
request		

Г

Working Line Takeover Erroneous Transfers ("WLT ETs")

			Tier	
Solution	Assumption	А	В	С
OR Database Clean up	Unknown / Not Costed		n/a	
Unique address reference via NLPG Mandate that CPs only place WLT orders where they have an exact match, having regard to industry best practice guidelines in attempting to identify the correct line	Unknown / Not Costed		n/a	
	CSA Training Days	2.5	50	750
	Man Days to Adjust CIM	0	60	100
	Incremental CSA time (mins)	n/a	n/a	n/a
Ensure visibility of pending cease to GP / Hub	CSA Training Days	3	50	750
	Man Days to Update systems	0	45	90
	Incremental CSA time (mins)	2	2	2
Mandate communication to the incumbent end-user via notification letters	CSA Training Days	0	0	0
	Man Days to update systems	0	20	50
	Cost per SMS Message (£)	0	0	0
Gen of MAC for non DN services (inc. MPF)	Man Days to set-up MPF provider interface to Openreach	n/a	n/a	1
	CSAs to Train	n/a	n/a	1,500
Mandate Cancel Other (Voice + BB)	Man Days to Update CIM	0	16	30
	CSAs to Train	10	100	1,500
Allow Hub to make Cancel Own / Other request	Man Days for Additional Design and Testing		25	



18.ANNEX 4: DETAILED ASSUMPTIONS TABLE FOR INDIVIDUAL E-NOT ENHANCEMENTS

Process Assumptions³¹

	E-NOT (H)		
	Tier		
	А	В	С
# of CSAs to be trained*	5	100	1,500
# of training days for CRM	0	100	1,500
# of training days for CIM	28	450	6,750
# of process documentation days for CRM	0	0	0
# of process documentation days for CIM	0	180	310
Gaining call handling time (mins)	12	12	12
Losing call handling time (mins)	0	0	0

System Assumptions³²

	E-NOT (H)		
	Tier		
	А	В	С
# of days for delivery of CRM system changes	0	70	150
Additional hardware required for CRM changes (£)	6,375	20,000	50,000
Additional hardware required for Billing changes (£)	0	0	0
Days for delivery of COM system changes	2	103	166
Additional hardware required for COM (£)	0	0	0
Days for delivery of SOM system changes	0	60	400
Additional hardware required for SOM (£)	0	0	0
Days for delivery of Partner Management system changes	0	130	210
Additional hardware required for Partner Management (f)	0	0	0
Days for delivery of CPM system changes	0	0	0
Additional hardware required for CPM (£)	0	0	0
Days for delivery of SPM system changes	0	0	0
Additional hardware required for SPM (£)	0	0	0
Days for delivery of Customer Self Mgt. system changes	0	160	290
Additional hardware required for Customer Self Mgt. (£)	0	0	0

³¹ CSMG estimates ³² CSMG estimates. Tier B SOM and SPM costs are expected to be significantly lower than Tier C, as a large proportion of this cost will be



19. ANNEX 5: ENHANCED MAC

Introduction

- 19.1. As part of its wider review of consumer switching processes, Ofcom wished to understand the costs of a Harmonised MAC model. CSMG was asked to estimate the costs of an Enhanced MAC (harmonised) model, with Sim Provide functionality included, and to provide a high level specification in the same manner as for the other switching models discussed in Section I. This model is hereafter referred to as "E-MAC".
- 19.2. Ofcom also asked CSMG to consider what, if any, additional solutions would be proportional to address ETs during switching and the WLT process under a harmonised MAC regime, and to provide costs for these enhancements.
- 19.3. The model specification, costs, discussion of further solutions to address switching and WLT ETs, and cost breakdown for Tier C CPs, are all given in this annex.

Model Specification

- 19.4. Enhanced MAC (Harmonised) is an incremental model where switches for voice are carried out under a MAC process, instead of the existing voice-NoT process. As broadband services continue to be switched under MAC, both voice and broadband are now switched under a MAC process, and the model is thus "harmonised".
- 19.5. The "Enhanced MAC (Harmonised)" switching process performs authentication and Record of Consent via existing methods with the customer's existing provider, the LP, albeit harmonised to allow generation of MAC for voice services, not just for broadband.
- 19.6. The consultation document also specified a number of enhancements to the MAC process³³, which would apply in this Harmonised process. These enhancements are as follows:
 - 1. Require providers, at a minimum, to accept MAC requests by telephone and, where requested over the phone, to issue either immediately over the phone or within two hours by e-mail or SMS (or by another reasonable method if the consumer asks, and the provider agrees, e.g. a call back facility for those that are unable to use email or SMS).
 - 2. Setting up a dedicated MAC provision facility, with clear rules prohibiting reactive save³⁴ activity from the MAC provision activity and call recording obligations. Providers would be required to collect performance management information (e.g. average time taken to provide the MAC).
- 19.7. In addition, the use of Sim Provide functionality is would be included in the E-MAC model.





³³ See Figure 25 in February consultation document.

³⁴ Reactive Save describes action taken on the part of the LP, to dissuade a customer wishing to terminate a voice or broadband service, from doing so. CSAs trained in customer retention may offer a reduction in monthly recurring charge, or other financial or product incentives, in order to persuade the customer to continue his / her relationship with the LP.





Figure 34: Enhanced MAC (Harmonised) – High-Level Process Diagram

- 19.9. At the start of the sales process, the Gaining Communications Provider (GP) will make a Dialogue Services type call to the Access Operator (AO). Where the GP provides broadband using a wholesale product such as BT WBC³⁵, the Dialogue Services call would be made via a Wholesale Communications Provider (WCP) to Openreach.
- 19.10. During the sales process, the GP will instruct the customer to obtain a MAC from their current provider, the LP. Alternatively, the customer might have already spoken to the LP and proactively asked for a MAC. The formal process sees the customer contacting the LP first to obtain a MAC, and then contacting the GP to provide this MAC.
- 19.11. A single MAC is used to switch a single service. Multiple MACs will be required to switch multiple services (bundles) simultaneously. Multiple MACs could be provided for multiple services by the same provider, or alternatively, if the customer has voice and broadband services from multiple (most likely two) providers, the customer would need to obtain a MAC from each provider independently.
- 19.12. The customer contacts his / her current CP(s) via a dedicated communication channel to obtain a MAC. The LP is prohibited from making a so-called "reactive save" on this dedicated communication channel.
- 19.13. The LP(s) will then authenticate the customer using existing methods (via phone or online). Once the services to be switched have been identified by an agent or end-user (if



³⁵ BT Wholesale Broadband Connect

online), the LP(s) will record the customer's request for MAC(s) and will perform Asset Validation.

- 19.14. Upon request, a MAC should ideally be delivered to the customer immediately. In the phone and website communications channels, the MAC would either be read out to the customer, or provided on a webpage. When a MAC cannot be immediately supplied to the customer, LPs are required to issue the MAC within 2 hours, via email, text message, or a telephone call placed by the LP to the customer. Other options for receiving the MAC should be available for those customers with disabilities.
- 19.15. Asset Validation for both voice and broadband is performed using the MAC mechanism. The "MAC" reliably and accurately identifies and tags the correct assets and services to be switched. It provides a unique reference for a migration - an "Authorization Code", that is produced at the time of migration by the LP (via BT Wholesale or Openreach directly). A MAC is sequentially passed up and down the asset chain from the LP to the AO, ensuring that all assets and services are correctly tagged by all the players in the supply chain.
- 19.16. It is expected asset identification and validation would occur in real-time while the customer is on the call with the agent or online, and thus, as stated previously, the customer would ideally receive the MAC(s) before the end of the call or online session.
- 19.17. Once the asset has been correctly tagged, the GP validates the MAC received from the customer using Openreach's Dialogue Services and then initiates the back-end switching process using the MAC.
- 19.18. MAC(s) would expire after a set period if unused (e.g. 30 days), as per the current MAC process.

Model Results

- 19.19. CSMG's cost estimate for the E-MAC model is given below. No Record of Consent is required under E-MAC because the act of a consumer retrieving the MAC from their Losing Provider and giving it to the Gaining Provider is considered to be a clear form of consent.
- 19.20. No solutions to switching ETs are required under E-MAC. This is explained in the following section ("Additional Solutions to Switching ETs under E-MAC").
- 19.21. No solutions to WLT ETs are required under E-MAC. This is explained in the section ("Additional Solutions to WLT ETs under E-MAC").



Figure 35: **10 Year NPC of Basic Switching Model, Record of Consent, Switching ET solutions, WLT ET** solutions, and Total NPC for E-MAC (£m)

<u>10 Year NPC</u>	E-MAC
Basic Switching Model Option	£42m + x
Record of Consent	n/a
Solutions to Switching ETs	£0m
Solutions to WLT ETs	n/a
Total Cost of Switching Model	£42m + x

- 19.22. The largest cost driver for E-MAC is the LPL harmonisation effect. Consumers require more CSA time in total, as under E-MAC a consumer would speak to the losing provider as well as the gaining provider. On an ongoing Opex basis, this creates additional cost.
- 19.23. There is an unknown cost for E-MAC, indicated by "+ x". E-MAC would require BT Openreach to replace the existing NoT process used for voice and bundled switches with a MAC process similar to that used for broadband switching. The cost to Openreach of this transition is unknown, and CSMG has been unable to estimate this cost without input from Openreach. The costs given for the E-MAC model are therefore understated by this unknown cost.

Additional Solutions to Switching ETs under E-MAC

- 19.24. Implementation of the E-MAC model would result in a very significant reduction of Switching ETs for a single reason: that the LP identifies the asset to be switched, and the identification of that asset is passed to the GP via the customer in the form of a MAC.
- 19.25. Note the similarities between E-MAC and LPL-TxC.
- 19.26. It is therefore extremely unlikely that the wrong line is switched, as the MAC process ensures that all parties involved in the switch have identified the same line.
- 19.27. The only remaining Switching ETs would be where Openreach had incorrectly mapped the termination point, as per the other models.
- 19.28. There is therefore no additional solution required, and no additional cost for this switching model.

Additional Solutions to WLT ETs under E-MAC

- 19.29. Analysis of WLT ETs under the E-MAC model produces exactly the same results as LPL-TxC. The conclusions are briefly summarised as follows:
- 19.30. E-MAC greatly reduces Switching ETs, and no additional investment is recommended to address Switching ETs.



- 19.31. WLT is problematic under E-MAC, either as a LPL process (not efficient for consumers) or GPL (highly vulnerable to WLT ETs).
- 19.32. Given the level of investment required to address WLT ETs it is recommended that the WLT process is not modified under E-MAC.
- 19.33. Hence there is no additional cost, but no additional benefit.

Cost Breakdown

- 19.34. For the Enhanced MAC (Harmonised) model, the most significant set-up cost is in modifying the order stack to support MAC for voice products. Changes to Customer and Service Order Management represent the greatest costs. Customer Interface Management systems and Customer Self-Care systems are also required to support the harmonisation to MAC. Additionally, investment in call recording systems is required (shown under customer order management).
- 19.35. In terms of ongoing costs, there is large increase in ongoing cost resulting from customers calling their losing providers to obtain a MAC for the switch of a voice service, and the corresponding additional CSA time. This is partially mitigated by the dedicated MAC line enhancement.





Figure 36: E-MAC: Tier C Set-up and Ongoing Cost Breakdown



20. ANNEX 6: MPF – MPF MIGRATE

- 20.1. CSMG was asked by Ofcom to consider the costs for industry to adopt the MPF MPF migrate process.
- 20.2. MPF MPF migrate is a process that allows a customer to switch their voice and broadband services from one MPF provider to another, without incurring loss of service.
- 20.3. CSMG estimated the cost for industry to adopt the MPF MPF migrate process, which include costs to train customer service agents, and systems updates.
- 20.4. The 10 Year NPC of mandating MPF-MPF migrate is £1.15m, which covers costs borne by BSkyB and TalkTalk.



Term or Abbreviation	Description
AP	Access Provider
CIM	Customer Interface Management
CLI	Customer Line Identification
СОМ	Customer Order Management
СР	Communications Provider
СРМ	Customer Problem Management
CRM	Customer Relationship Management
CSA	Customer Service Representative
CCS	Customer Cancel Service
ET	Erroneous Transfer
ETC	Early Termination Charges
eTOM	Enhanced Telecoms Operations Map
GP	Gaining Provider
GPL	Gaining Provider Led
LLU	Local Loop Unbundling
LP	Losing Provider
LPL	Losing Provider Led
MAC	Migration Authorisation Code
MPF	(Full) Metallic Path Facility
NoT	Notice of Transfer
OR	BT Openreach
SI	Service Implications
SOM	Service Order Management
SPM	Service Problem Management
TAM	Telecom Applications Map
TPI	Third Party Integrator
TPV	Third Party Verification
ТхС	Transfer Code
TxCIA	Transfer Code Issuing Authority
USN	Unique Service Number
WLT	Working Line Takeover
WP	Wholesale Provider

21.ANNEX 7: GLOSSARY OF ABBREVIATIONS



CONTACT DETAILS

CSMG is a specialist strategic consultancy focused exclusively on the telecoms and digital media sectors. With offices in North America, Europe and Asia, we work for wide range of companies around the globe in these converging industries.

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