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Submissions to Consultation

Intra Migration Premium

Submissions received from respondents

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Response to ComReg Doc. 08/105

Consultation and Draft Decision – Intra Migration Premium

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EXECUTIVE SUMMARY

eircom welcomes this opportunity to respond to ComReg's consultation and draft decision document 08/105, "Intra Migration Premium", of 23rd December 2008.

eircom agrees that it is appropriate to review the level of the Intra Migration Charge. The level of this charge is based on the real option ***granted*** to the OAO on connection of a Bitstream service to migrate that service to LLU. This real option is ***exercised*** by the OAO when they choose to migrate from Bitstream service to LLU service. This option is a put option because it enables the OAO to put the Bitstream investment back to eircom before the assets are fully depreciated. The option is an American put option because the OAO can exercise it at any time between Bitstream connection and the expiry of the eircom Bitstream investment.

A large part of the Consultation Paper is taken up with a flawed analysis of the options available to the OAO around their own investment, necessary to enable the LLU delivery of services to their customers. Whether this investment grants the OAO a call option has no relevance to the put option they exercise when they migrate from the eircom Bitstream service to LLU provision using their own investment. This is the case because both options can exist independently of each other. The ComReg preliminary conclusion that the eircom Intra Migration Charge has no basis is founded on this same flawed analysis

eircom calls on ComReg to put aside the inconsistent, flawed and poorly-argued attempt to undermine the basis for the current charge – and to focus instead on a genuine review of the level of the charge based on a study of the appropriate parameters for the real put option that is at issue.

GENERAL REMARKS

The subject of this consultation paper is the price charged by eircom to Other Authorised Operators (OAOs) for migration from the eircom Bitstream service to either of the eircom ULMP or LS services. In its executive summary to the Consultation Paper entitled "Intra Migration Premium", ComReg raises a number of issues that have no relevance to pricing the Intra Migration Charge; makes statements around the level of charge unsupported by any evidence in the body of the consultation paper, and describes the option to migrate in a way that demonstrates a fundamental misunderstanding of the economics of the service being bought. The OAOs claim that the charge is excessive has no relevance to the correct level of Intra Migration Charge. OAOs will always argue that each legitimate wholesale charge they face is "excessive" as a lowering, or removal, of that charge will improve their business case. OAOs have no evidence of the relationship of Bitstream prices to the cost of the eircom DSL investment and so have no evidence that the Intra Migration Charge exceeds the cost of the portion of that investment put to eircom on migration to LLU.

ComReg, in its executive summary to the consultation paper, states that the eircom price for the Intra Migration Charge "is excessive ***and*** has no real basis". This statement is logically inconsistent. If the price has no real basis, the level of that price is then moot. The price could only be excessive if it has a real basis. For the avoidance of doubt, eircom believes that the price has a real basis but that it is not excessive.

ComReg goes on to state that "there cannot be any ***granting*** of any such (American Put) option to the OAO ***at the time of the Intra Operator Migration*** and therefore there is no option value". This statement exhibits a fundamental misunderstanding of the form of option at play in migrating from Bitstream to LLU service. The option is ***granted*** at the time of connection to the Bitstream service; the same option is then ***exercised*** at the time of the migration from Bitstream to LLU. If the ComReg position is that no option (to subsequently migrate seamlessly to LLU) is granted to the OAO at the time of the connection to the Bitstream service, then ComReg would have no further role in setting the Intra Migration Charge – and eircom should simply proceed to negotiate migrations commercially with OAOs.

RESPONSE TO CONSULTATION QUESTIONS

Q. 1. Do you agree or disagree with what is classified as Intra Migration? Please explain your response in detail.

eircom agrees with the ComReg definition in paragraph 2.3 of the Consultation of what is classified as an Intra Migration from a Wholesale service to a LLU service. eircom agrees that the first six of the seven instances itemized by ComReg in the same paragraph are those where an Intra Migration price is chargeable. The first four are the full set of cases where the particular price that is the subject of this consultation is chargeable. eircom does not currently propose to charge a migration fee for the fifth and sixth instances. The seventh instance described by ComReg may be an intra-migration in the general sense that the form of wholesale service used changes but the customer/operator relationship does not. However it is the operator – rather than eircom – who selects from the range of wholesale options in deciding how to serve their customer. For this reason there is no question of reciprocity in the migration fee that eircom is entitled to charge for Bitstream to LLU migrations arising from the exercising by the operator of the put option. This is the case because eircom has no option to exercise. Rather, the seventh instance is a case of the operator, serving the customer, exercising a further option to migrate from LLU to Bitstream.

Q. 2. Do you agree or disagree that the premium for Intra Migration should be reviewed? Please explain your response in detail.

The issue here is the additional charge raised by eircom over and above the relevant LLU connection fee when the access seeker exercises an option to migrate seamlessly from Bitstream to LLU provision of Broadband services. eircom agrees that it is appropriate to have a periodic review the level of the price for Intra Migration because the levels of some parameters in the formula, used to determine the value of the put option available to the Bitstream/LLU access seeker, may change over time. However, the ComReg consultation paper makes no attempt to review the level of the parameters in the American Put Option formula used as the basis for the eircom charge.

Q. 3. Do you agree or disagree with ComReg's preliminary opinion that there is no option being bought by the OAO for Intra Migration? Please explain your response in detail.

eircom does not accept ComReg's preliminary opinion that there is no option. The option is granted when the OAO takes a bitstream service. The option could be paid for when granted, or when exercised. eircom charges when exercised. The option to migrate from Bitstream to LLU is granted by eircom when it makes sunk investments in Bitstream infrastructure, provides Bitstream service with short minimum contract lengths, and allows for subsequent seamless migration to LLU services. Therefore, the migration charge compensates eircom, should this option be exercised before these sunk investments are paid off. This is clearly a put option as the Bitstream access seeker has the option to put the Bitstream investment back to eircom. The option is an American put option because the access seeker can exercise the option at any time from connection of the Bitstream service.

In the discussion of an LLU investment in the Consultation Paper leading up to paragraph 4.14 ComReg proposes that the option held by the OAO may be an "American Call Option" based on the costs and revenues available to the OAO before and after an LLU investment. This may well be the case, but is it not relevant to the pricing of the Intra Migration Charge. Possession of put and call options are not mutually exclusive – and can arise from a single investment. Even an OAO who has not themselves invested in LLU can exercise the American put option to put Bitstream investment back to eircom by migrating their service to Bitstream infrastructure, available after the LLU investment of a second OAO. So the presence or absence of the call option arising from an LLU investment is not actually relevant to the put option granted at the time of connection to the eircom Bitstream service.

Q. 4. Do you agree or disagree that the appropriate mechanism for eircom to recover such a migration option value is in the current Bitstream price as set by the current retail minus price control? Please explain your response in detail.

eircom does not agree that the appropriate mechanism to recover migration option values is the Bitstream price. ComReg has set Bitstream prices using a retail-minus control, where the Bitstream price is set at the level of the eircom retail Broadband price less the avoided retail costs. This mechanism was agreed by eircom on the basis that a Bitstream price, set to recover the cost of the Bitstream investment during the market growth phase – characterized by low and uncertain demand – could have the effect of stifling market development. Retail Broadband prices have fallen as the market has grown and become more competitive where customers are able to choose between several infrastructure competitors. This has continuously driven Bitstream prices.

Even if eircom had the possibility of setting Bitstream prices at the level to recover the value from the OAO of their option to put the Bitstream investment back to eircom, it is unlikely that this price structure is the most efficient. The higher level of Bitstream price that this would entail would, in effect, be a penalty on those OAOs who did not exercise the option.

It may well be that the migration charge, which allowed for a lower monthly rental charge, is optimal, as it allowed OAOs the lower possible charge, given the uncertainty of when or whether they would later migrate. ComReg suggests the optimal structure of charges might include no migration charge. But the notion that a migration charge is reducing the OAOs' incentive to migrate is not evidence of the optimal structure of charges, merely that purchasers always prefer lower charges/prices.

Q. 5. Do you believe any issue associated with stranded Bitstream assets following a migration from Bitstream should be dealt with under a review of Bitstream pricing planned for 2009 where a cost plus regime will be considered? Please explain your response in detail.

eircom believes that the issue of stranded assets should certainly be addressed in the cost modeling that will inform Bitstream price setting. However it does not follow that the most appropriate way to deal with the cost of stranded assets when setting a Bitstream price, based on eircom costs, is to recover this from Bitstream rentals that are charged to all OAOs. Those that do not intend ever to migrate should not have to pay for a facility which they do not require. eircom proposes that it is more reflective of the ***cost causation*** principle for wholesale price setting, that only those OAOs who exercise the migration option are charged the cost of that option. This form of pricing will lead to lower Bitstream prices for the OAO that continues with the use of the service - by not exercising the option to put the Bitstream investment back to eircom. Only the OAO exercising the option is charged for the cost of the partial stranding of the Bitstream investment caused to eircom. In summary there is no reason why the move from retail-minus to cost-based pricing for Bitstream services should lead to a change in the price structure – and in particular, there is no reason why such a move should lead to removal of an Intra Migration Premium.

Finally, even if the cost-plus regime for Bitstream pricing is implemented after a review of the WBA market in 2009, and the cost of the migration option is recovered from the resulting Bitstream price,that is no reason to set the Intra Migration Premium charge to €0. As shown above, the current Bitstream pricing regime allows no mechanism for recovering the migration option cost other than the Intra Migration Premium charge.

Q. 6. Do you agree or disagree that if the current Intra Migration Premium were to continue for Intra migrations (for example from Bitstream to LLU), that this could have a negative impact on investment by OAOs in retail broadband over the medium to long term? Please explain your response in detail.

eircom disagrees that the current charge will have a negative impact on investment in retail broadband. OAOs invest in retail broadband in three ways: by buying bitstream, by buying LLU and by first buying bitstream and later migrating to LLU. The first two approaches are actively encouraged by the current price. Bitstream prices are lower, and direct connection to LLU – avoiding a later migration charge - is encouraged. The risk reducing alternative of initially offering bitstream, and later migrating to LLU, is correctly priced. Failing to set the correct price would distort market signals. OAOs will always prefer lower charges but there is no evidence that the current Intra Migration Premium charge has had any negative impact on LLU investments. Indeed, there is evidence to the contrary, that OAOs had already made LLU investments in the eircom exchanges serving the customer line ***before*** they took up the Bitstream service that they may now wish to migrate seamlessly onto that platform. Some 75% to 80% of Bitstream services that OAOs now seek to migrate, fall into this category – connected ***after*** the LLU investment at that serving exchange. All evidence to date suggests that the OAO wishes to avail of the lower Bitstream price set without any mechanism to recover the option cost of a subsequent migration – and then to migrate these services to LLU provision when ComReg has reduced the Intra Migration Premium charge to zero. The current ComReg proposal on Line Share pricing makes this OAO strategy all the more compelling.

Q. 7. Do you agree or disagree that an Intra Migration Premium is contrary to the principles set out in paragraph 2.2? Please explain your response in detail.

eircom disagrees that an Intra Migration Premium is contrary to the principles set out in paragraph 2.2. We will take the principles in turn:

- Promote competition; – the Intra Migration Premium is the most efficient way to recover the cost put to eircom and, as such, has the effect of promoting competition. The alternative approach available, before the Intra Migration Premium pricing structure was agreed, was to set Bitstream prices to recover this cost. This second price structure tends to be less promoting of competition in two ways. The higher Bitstream price would, of necessity, be charged to all competitors re-selling the eircom Bitstream service regardless of their intention to migrate subsequently. This would have had the effect of penalizing those OAOs who had no plan to migrate away from Bitstream provision of their retail Broadband proposition. Apart from this effect, the higher general level of Bitstream prices would have depressed the level of inter-platform competition between the eircom ADSL platform and cable, wireless, and satellite platforms.

- Promote the interests of users across Ireland; – it is not in the interests of users for wholesale pricing to be set at levels that do not allow any one service provider to recover their efficiently incurred costs. The eircom Bitstream investment has enabled eircom to recover the costs of the copper access network across telephony and broadband services sold to a large number of users within the Irish community. Reducing Broadband and Bitstream prices has driven increased retail and wholesale demand for services delivered over the eircom ADSL platform. This in turn has allowed eircom to maintain PSTN access prices – both wholesale and retail – below the level of the price controls applied in the narrowband access market. So the existing structure of Bitstream prices has benefited users across Ireland.

- Ensure no distortion or restriction of competition; – competition is distorted or restricted when a competitor is prevented from recovering their efficiently incurred cost, either by the actions of another competitor with market power, or by an incorrect decision by the regulator. A decision which does not allow eircom to recover the cost of the option, exercised by an OAO to put the

Bitstream investment back to eircom, would be an example of the latter – as there is now no mechanism to raise Bitstream prices and to recover this cost through rental revenues. In any case, a decision to recover the costs of the put option from Bitstream rentals would also distort competition as it would require all OAOs to contribute to the costs of the option that would only be exercised by those actually implementing a migration strategy.

- Encourage efficient investment;– correct wholesale pricing structures encourage efficient investment both by the incumbent and by new entrants. The current structure, characterized by lower Bitstream prices and the Intra Migration Premium, sends the correct economic signals to the OAO when considering an LLU investment. A higher Bitstream rental and no migration charge would simply have the effect of distorting the LLU investment decision for the OAO – thereby encouraging inefficient entry. It would also have the effect of stranding eircom DSL assets, leading to less efficiency in both the eircom and OAO platforms.

- Encourage access to the Internet at reasonable cost to end users; – clearly lower Bitstream prices lead to lower costs for high speed Internet access services to end users. The eircom proposal to implement the Intra Migration Premium, charged at the time of migration, will allow eircom to maintain lower Bitstream rentals - and recover the costs of partial stranding of DSL investments from the OAO as they exercise the option to migrate to LLU.

Q. 8. If you believe a premium should be charged for Intra Migration (for example from Bitstream to LLU), what premium would you believe is appropriate and when should this premium be paid by OAOs? Please explain your response in detail.

The original report from Indecon, which was attached to the previous eircom submission to ComReg on Intra Migration pricing, sets out a considered view of the calculation for the appropriate level of premium. Paying at the time of migration is the most sensible option for maintaining Bitstream rental prices, and allowing uncertainty in the market to reveal the best timing of payment for the OAO, as the market develops.

Q. 9. Do you have any further views on the theory of option value that has not been considered by ComReg when setting regulated wholesale prices? Please explain your response in detail.

ComReg has evidently not considered the possibility that a put option can exist alongside a call option, nor has ComReg produced any evidence or theory that indicates that two such options cannot co-exist. This issue is discussed in detail above and in pages 7 to 10 inclusive of the paper "Indecon Response to ComReg's Draft Determination Setting the LLU Migration Charge to Zero" that is attached as Appendix A to this response.

Q. 10. Do you have any further views on the Intra Migration Premium methodology as set out in eircom's report published as 08/105a, other than that set out by ComReg in this consultation? Please explain your response in detail.

For the reasons outlined above, the eircom position on the Intra Migration pricing methodology remains as set out in eircom's report published as 08/105a.

Q. 11. Do you have any experience of, or know of, any similar charging mechanism using an option value in other European member states? Please explain your response in detail.

The existence of option values and put-option like characteristics in a regulatory setting is common. A number of possible remedies are available including longer minimum contract lengths, switching charges and migration charges. In general, migration charges exist in the UK; the European Regulators' Group (ERG) has recognized that migration charges might be optimal and suggests that they are reasonable.

In the telecommunications industry, there are various international examples of access pricing whereby OAOs pay a migration or switching charge to the wholesaler for the service of disconnecting the equipment from one network and connecting it to another.

A migration charge in wholesale access markets compensates incumbents for considerable sunk investments and is equitable provided it does not undermine the creation of a sustainable competitive market. It is important that a fair rate is reached that appropriately compensates an access provider for the investment but, at the same time, does not create a barrier for operators. In line with this, the ERG states that 'charges for migration should be reasonable and not deter acquisition of existing customers'.[1] However, there is no agreed consensus on the extent of the switching charge, nor how it is to be implemented. Rates and implementation mechanisms vary across countries and regulators. One proposal was given in a study by the Broadband Industry Group in 2004[2], which suggested that Ofcom should set rates for 'a comprehensive set of migration charges covering switching between any IPStream, Datastream, shared access and fully unbundled loops'. In addition to this, in a document on the 'Substantive Rules Applicable to Telecommunications Service Providers'[3], the Public Utility Commission of Texas outlined the processes and rules on dominant certified telecommunications utility (DCTU) rates for intrastate access services. It recommended that there should be one premium local switching rate element.

In a response paper to the PTS consultation on Bitstream in 2004[4], BT Nordic states that the decision to permit switching charges in conjunction with retrospection of charges would be 'consistent with recent regulation decisions'. The paper cites the Netherlands and the UK as being two examples of countries where the respective regulators set these kinds of migration charges. In other countries, the migration charge has been more precisely quantified. For example, on 26 May 2005, BT announced the introduction of a special offer for bulk shared metallic path facility migrations of £20 per end user[5]. In this instance, BT was required to offer a maximum charge of not more than £27.54 per migration. A second example is New Zealand's primary competition regulatory agency, the Commerce Commission, which sets out a number of charges in relation to Sub-loop services. They advocated a

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[1] ERG Common Position: On best practice in remedies imposed a consequence of a Position of significant market power in the relevant markets for wholesale leased lines, The European Regulators Group - http://erg.eu.int/doc/publications/erg_07_54_wll_cp_final_080331.pdf

[2] Ofcoms consultation on the review of the wholesale local access market identification and analysis of markets, determination of market power and setting of SMP conditions, The Broadband Industry Group, June 2004 - http://www.ofcom.org.uk/consult/condocs/rwlam/responses/big.pdf

[3] Substantive Rules Applicable to Telecommunication Service Providers, Costs, Rates and Tariffs. Texas, The Public Utility Commission of Texas - http://puc.state.tx.us/rules/subrules/telecom/26.205/26.205.pdf

[4] BT Response to PTS consultation on Bitstream, 15 March 2004, The Swedish Post and Telecom Agency (PTS) - http://www.pts.se/upload/Documents/SE/BT_remissvar.pdf

[5] Determination to resolve a dispute between Opal Telecom and British Telecommunications PLC (Openreach) about LLU bulk migration charges, Office of Communications - http://www.ofcom.org.uk/bulletins/comp_bull_index/comp_bull_ccases/closed_all/cw_889/determin/determination.pdf

charge of NZ$34.43 for the migration service component (from the local exchange to the distribution cabinet).[6]

Q. 12. Do you agree or disagree that there are no other costs for consideration in the Intra Migration Premium? Please explain your response in detail.

eircom agrees that there are no costs other than the value of the American Put Option to be recovered from the Intra Migration Premium. This is the case because the connection fees for the LLU services that the OAOs propose to use to serve their customer after migration from Bitstream service, recover the costs immediately incurred by eircom in delivering the connection service.

Q. 13. Do you agree or disagree with ComReg's proposed pricing for the Intra Migration Premium being set at €0(NIL)? Please explain your response in detail.

eircom strongly disagrees that the price for the Intra Migration Premium should be set to €0. The detailed reasons for the eircom position are set out at length above and in the Indecon paper attached as Appendix A to this submission. These reasons can be summarized as follows:

- There is a real option granted to the OAO on connection to a Bitstream service for the subsequent seamless migration to one of a range of LLU services.
- This option is an American Put Option – and the presence or absence of a separate call option related to an OAO investment in LLU is of no relevance to the pricing of the Intra Migration Premium. ComReg argues as if the presence of a call option around the LLU investment precludes the presence of a separate put option granted at the time of the Bitstream connection. The logic of this argument is fundamentally flawed as there is nothing to prevent two options existing in parallel.
- The option granted to the OAO on Bitstream connection – and exercised at migration – is the option to put the Bitstream investment back to eircom. The migration has the immediate effect of stranding part of the Bitstream

[6] Draft Standard Terms Determination for the designated services of Telecom's unbundled copper local loop network service (Sub-loop UCLL), Telecom's unbundled copper local loop network co-location service (Sub-loop Co-location) and Telecom's unbundled copper local loop network backhaul service (Sub-loop Backhaul), The Commerce Commission, New Zealand - http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/StandardTermsDeterminations/SubloopUCLLservice/ContentFiles/Documents/Decision%20Report%20737685_1.pdf

investment and the calculation proposed by eircom (in the original Indecon paper attached here as Appendix B) is the best evaluation of that option.

- ComReg proposes that the value of any option to migrate is already recovered from Bitstream revenues. This is not the case as the Bitstream revenues have not recovered the costs of the network investment – and the retail-minus controls on Bitstream prices preclude eircom from raising Bitstream prices in the presence of increasingly competitive retail Broadband markets.

Q. 14. Do respondents believe that the draft text of the proposed decision instrument is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed?

The decision does not identify the legal obligation that requires eircom to offer Intra Migrations at €0. Such migrations were not offered before September 2007 and then were offered at the cost oriented price of €47 – based on the analysis of the option value, and on the basis of prices set for related Bitstream and LLU services. ComReg has not explained why a cost component previous allowed should now be disallowed. ComReg proposes in the Direction to set the IMP to €0 but has established no basis for obliging eircom to continue to offer the service at a price below the level of the value of the new option granted. eircom believes that ComReg has no legal basis to set the price to €0 as proposed in the Draft direction. However ComReg would only have a reasonable basis to review the level of the price were it to examine the cost basis for the current price. That is, if ComReg reviews the parameters in the calculation of the put option value it will establish the correct cost basis for the Intra Migration Premium. eircom again refers ComReg to its previous submission in this regard.

Indecon Response to ComReg's Draft Determination Setting the LLU Migration Charge to Zero

Prepared for eircom

By Indecon International

Economic Consultants

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1 Executive Summary

This document is Indecon's response to ComReg's consultation and draft decision on the estimation of an intra LLU migration charge.

Previously, Indecon estimated the value of the option of Other Authorized Operators (OAOs) to abandon bitstream to full LLU, or 'migrate' from one eircom wholesale service to another. This switching could involve significant sunk investment costs for eircom as the former involves investment in equipment which is partially specific to the task of bitstream access, while full LLU would involve more investment by the OAO.

Indecon estimated the value of this option using standard option valuation techniques and various estimates of the necessary parameter inputs. The estimated value of the option was €48.

ComReg, having previously allowed a migration charge, have now issued a draft decision and consultation suggesting the charge[1] should be zero. In the interim period, eircom has made investments and charged for bitstream at prices under the understanding that the migration charge was in place, should OAOs migrate early.

In their draft direction document (08/105), ComReg makes a few technical critiques, but ComReg's key arguments can be summarised into three main points; they are:

1. OAOs possess a 'call option to invest' therefore, they 'cannot[2]' possess a put option.

[1] We note that ComReg's title of the decision notice uses the term 'premium'. In fact, there is a difference between an "option 'premium'" and the "value of an option". The premium is the part of the option above and beyond the intrinsic value of the option, while the value of the option is the premium plus the intrinsic value. We are interested in the larger second value of the option and argue that is the basis for the charge. In this, we assume that ComReg is in fact meaning the 'option value' when they have called it a 'premium', and that the 'premium' that ComReg refers to is the additional charge for intra migrations over and above the standard connection fee for the LLU service purchased.

[2] ComReg 08/105, Executive Summary, "ComReg is of the preliminary opinion that there 'cannot' be any granting of any such option…."

2. There is 'no option value at all if asset lives and WACC are set correctly'. That is to say, that the existence of real options is irrelevant if regulated prices are set 'correctly' according to standard neoclassical investment theory criteria.
3. Eircom is 'free to set' bitstream prices at whatever level they like, and therefore should not be under-recovering their sunk costs; if they are, eircom should simply raise the price of bitstream.

All of these statements are refutable and we argue the reasons in detail in the body of the report, but summarize here:

1. OAOs possess a 'call option to invest' therefore, they 'cannot[3]' possess a put option.
    a. The option to leave, abandon, quit, or exit a project is found to be a 'put' option in all the basic and primary sources on real options.
    b. The existence of the former tells one nothing about the non-existence of the latter unless is has been shown the two are mutually exclusive, which has not been done.
    c. In fact, the real options literature is full of the existence of multiple options for complex business decisions, and even compound options, so it is perfectly likely that a put and a call could exist together.
2. There is 'no option value at all if asset lives and WACC are set correctly'. That is to say, that the existence of real options is irrelevant if regulated prices are set 'correctly' according to standard neoclassical investment theory criteria.
    a. The very nature and existence of real options is precisely the point that neoclassical investment theory, and the "standard" regulatory pricing principles is likely to give the 'wrong' answer—a wedge exists between the pure NPV of the project and the efficient 'price'.

[3] ComReg 08/105, Executive Summary, "ComReg is of the preliminary opinion that there 'cannot' be any granting of any such option…."

   b. ComReg again makes the logical error that if standard regulatory prices set based on neoclassical investment theory are correct, then there is 'no option value'. Again, unless they show that the two are mutually exclusive, then the first one tells one nothing about the true value of the option.

   c. ComReg's own document adheres to this in their discussion of the call option to invest.

3. Eircom is 'free to set' bitstream prices at whatever level they like, and therefore should not be under-recovering their sunk costs; if they are, eircom should simply raise the price of bitstream.

   a. This idea ignores the fundamental point that part of the sunk investments have already been made, contracts have already been fixed, etc, at prices that were commensurate with the migration charge's existence.

   b. Reducing the price to zero, having previously allowed it, *after* eircom has made sunk investments, is inappropriate and inconsistent with ComReg's previous position which allowed an intra migration charge.

   c. Because eircom faces a retail-minus type price control, it is not likely that mere profit maximising behaviour leads them to set price equal to cost in *each* of the wholesale and retail markets. This is proved in the mathematical section of the annexes.

ComReg makes a number of more technical critiques of the Indecon valuation method and points of logic and conclusion. We discuss these in turn during the response document that follows.

In general, we believe ComReg's draft decision to set the bitstream migration charge to zero is without merit and based on a fundamental lack of understanding of the nature of the rationale for the charge (the real put option) and a failure to adhere to their duty to properly consider eircom's point of view.

2 Introduction

2.1 The LLU Migration Option

In order to offer Bitstream Wholesale services to other authorized operators (OAOs), eircom must install expensive equipment (such as DSLAMs) in the telephony exchange centres. According to eircom, some significant equipment higher-up the network from the exchange must also be installed with the scope to handle the additional traffic due to bitstream. By installing this equipment, and also allowing the OAO to switch to local loop unbundling (LLU) services at any future time, eircom effectively gives the OAO an American real put option[4]. If this option is exercised at anytime before expiry (the expiry date corresponds to the time when the bitstream-specific assets are fully depreciated), then eircom is left with sunk costs in the form of bitstream-specific assets for which it cannot recover the costs. Depending on the costs of deployment and the remaining value of the assets, eircom may or may not find it worthwhile to redeploy these assets. If eircom is not compensated for these sunk costs, it is obvious that the OAOs have been given a free put option.

The aim of Indecon's previous study was to develop and employ an appropriate method for estimating the value of this put option.

ComReg has issued a Consultation Paper and Draft Decision on eircom's current bitstream pricing structure (ComReg 08/105) proposing to set the current migration charge from bitstream to full LLU to zero.

ComReg makes a number of arguments in the paper (08/105) in arriving at this conclusion, some of which are based on an apparent misunderstanding of the Indecon document and the nature of what is the bitstream migration charge, as well as the options involved with migration to LLU.

[4] We explain more about real options later. An option gives the holder the right, but not the obligation, to buy or sell something at a fixed price. In this case, the option is an "American" because the time to expiration is not fixed. The option is 'real' because it is based on physical or commercial arrangements, rather than a financial contract. A put option gives the holder the right to 'sell' rather than 'buy' an asset. In our case, migration from bitstream and leaving eircom with sunk investments in relation to that service is akin to 'putting' that value back on eircom.

In the remainder of this document, we discuss why we believe ComReg's draft decision to set the prices to zero is incorrect. The remainder of the document is organised as follows. The next section, section 3, sets out ComReg's main points and gives Indecon's responses. Section 4 responds to selected points and the consultation questions. Section 5 gives conclusions. The annexes contain more details of mathematical arguments.

3 ComReg's arguments and Indecon's responses

ComReg's arguments can be summarised into three main points:

1. OAOs possess a 'call option to invest' therefore, they 'cannot' possess a put option.
2. There is 'no option value at all if asset lives and WACC are set correctly'. That is to say, that the existence of real options is irrelevant if regulated prices are set 'correctly' according to standard neoclassical investment theory criteria.
3. Eircom is 'free to set' bitstream prices at whatever level they like, and therefore should not be under-recovering their sunk costs; if they are, eircom should simply raise the price of bitstream.

We assert that each of these points is based on what may be an inaccurate understanding of the issues at hand, and we refute each of these points below.

3.1 The option to exit, abandon, leave is a put option

Point #1, that the OAO has a call option to invest and therefore 'cannot' have a put option appears to be based on what may be an inaccurate understanding of the nature of the options involved. The first reason is a point of logic. The existence of the call option tells one nothing about the non-existence of the put option, unless it can be proved or has been shown, that the two are mutually exclusive. ComReg seemingly has not considered this, nor offers any evidence or argument that the two are mutually exclusive.

The OAO is likely to have a call option to invest, and we do not dispute this. It is however, likely a number of options exist in the business decisions of OAOs and telecoms operations.

More generally, the option to abandon one project in favour of another is a put option. There is no disagreement on this in the economic research on real options (see for example Dixit and Pindyck, 1994). There is a long and detailed literature on real options. While true that the most common type of real option is probably a 'call option' to invest or not, the put option is common in the literature too. For example, the ability of a lessee to break a lease agreement when the lessor has made sunk investment, has been commonly modelled as put option[5].

ComReg seems to misunderstand what is the nature of the option. Indecon has argued that the option is granted when *eircom* makes fixed and sunk investments in bitstream-related infrastructure, and enters into a (short lived) contract with an OAO. The payment of the migration charge only occurs if the OAO migrates prematurely—i.e., before the investments are fully depreciated. This does not have anything to do with the granting of the put option *at the time of migration*.

ComReg seems to admit that the put option could be characterised as Indecon has put forward. In paragraph 4.26, ComReg states, "Even if the OAO were regarded,…, as having 'acquired' the bitstream assets when it started leasing them, and its decision to terminate bitstream was then characterised as a put option, this decision is not taken in isolation. Rather it is part of the decision to migrate to LLU which, in view of the costs and cash flows involved, should properly be thought of as a call option." This last statement is clear evidence that ComReg recognises the nature of the put option, but erroneously concludes that the existence of the call option precludes the existence of the put option.

Again, considering the quite detailed body of economic research on real options, there is no discussion to our knowledge that the existence of a real call option precludes the existence of a real put option.

[5] Trigeorgis, L., *Real Options*, (MIT-Press, Cambridge, MA 1996) and Mcallister, Patrick, "Pricing Short Leases and Break Clauses Using Simulation Methodology," working paper, University of Reading, 2000.

The standard references on real options give standard taxonomies of real options and which options are likely to be puts and calls[6]. The existence of compound options is also detailed. A standard taxonomy of real options is as follows:

The nature of the put option in the real options framework is discussed in many sources. According to Harvey, "The topic of real options applies the option valuation techniques to capital budgeting exercises in which a project is coupled with a put or call option. For example, the firm may have the option to abandon a project during its life. This amounts to a put option on the remaining cash flows associated with the project. Ignoring the value of these real options (as in standard discounted cash flow techniques) can lead to incorrect investment evaluation decisions.[7]"

Further, as we stated, the general notion of the ability to leave a lease agreement, or a lease agreement where the terms of the lease are shorter than the lives of sunk investments made by the lessor, has been studied as a put option in the literature[8]

[6] See for example: Amram, Martha; Kulatilaka,Nalin (1999). Real Options: Managing Strategic Investment in an Uncertain World. Boston: Harvard Business School Press. Dixit, A.; R. Pindyck (1994). Investment Under Uncertainty. Princeton: Princeton University Press. Trigeorgis, Lenos (1996). Real Options: Managerial Flexibility and Strategy in Resource Allocation. Cambridge: The MIT Press. ISBN 0-262-20102-X.

[7]http://faculty.fuqua.duke.edu/~charvey/Teaching/BA456_2002/Identifying_real_options.htm

[8] Mcallister, Patrick, "Pricing Short Leases and Break Clauses Using Simulation Methodology," working paper, University of Reading, 2000.

The general existence of a put and a call option with respect to certain rental or lease agreements has been recognised and studied in the literature. According to Hamill and White (2006)[9], "A lease is simply the purchase of the use of an asset over a specified period of time (Grenadier 1995). Leases can be negotiated providing for a wide variety of rights to the contracting parties. These rights provide differing opportunities for flexibility to the lessee and are key to the valuation of the option portion of the contract. For instance, a lease may contain a combination of provisions such as allowing a lessee a cancellation right and/or a purchase option for a set price at the end of the lease term (Trigeorgis 1996, Copeland and Weston 1988). This form of lease agreement has two embedded options: 1) an American put option exercisable at any time (the cancellation provision), and 2) a European call option exercisable at the end of the lease term (the purchase option) (Trigeorgis 1996). In this example, the lessee is purchasing two rights in addition to the use of the asset. If the value of the use of the asset by the lessee declines during the lease term, the lessee can cancel the lease with no further outlays. Similarly, the lessee is afforded flexibility at the end of the lease term. If the value of the asset is greater than the option purchase price, the lessee will exercise the option; otherwise, the lessee can merely return the asset."

[9] James Hamil and G. White (2006), "Valuation Of The Embedded Option In A Non-Cancelable Lease: Theory And Application," Journal of Applied Business Research – Third Quarter 2006 Volume 22, Number 3.

ComReg's misapplication about the put versus the call is perhaps due to only considering the costs from the OAO's perspective, rather than the perspective of eircom. In paragraph 4.7, ComReg states, "ComReg must also look at this issue from eircom's perspective." But seemingly, ComReg have only considered the option value from the perspective of the OAO and not the perspective of eircom. For example, in paragraph 4.10, ComReg is discussing costs incurred by the OAO when it migrates from bitstream to LLU. Eircom (and the Indecon estimates of the option value) is not concerned with recovering the sunk investment costs that the OAO has incurred, eircom is concerned with recovering the costs eircom itself has incurred. In paragraph 4.11, ComReg states, "these costs are incurred at the point of migration and are (largely) irrecoverable, or sunk. These sunk costs form the 'strike price' of the option to migrate from bitstream to LLU." This is clear evidence that ComReg have not properly considered the issue, as ComReg are discussing the cost *to OAOs* as the sunk costs, rather than the sunk costs of eircom's bitstream-specific investments.

ComReg seems to dismiss the possibility of the put option being valid because they apparently don't understand the relationship between the timing of the migration and the nature of the option. ComReg states in paragraph 4.27, "If we were to look at the 'put' element along [alone?] (which would make little sense, since this does not determine the timing of the migration)." Apparently, ComReg is of the view that they can dismiss the existence of the put, 'because this doesn't determine the timing of the migration'. We would argue that the timing of the migration is independent of the type of option that is involved. The timing of the migration is a function of all the parameters of the option (volatility, interest rates, etc). The existence of other options (e.g., the call on investment opportunities) may impact the optimal timing of the migration, but this says little about the existence of the put.

3.2 The correct neoclassical investment theory-based pricing does not imply the option value is zero or zero stranded costs

Point #2, there is 'no option value at all if asset lives and WACC are set correctly' is erroneous because it misses the fundamental concept of real options valuation and its application here. The real options method shows that standard investment criteria may incorrectly value investments or business decisions because the fundamental neoclassical asset pricing equation (price = real rental rate, or NPV of rental charges = amortized acquisition cost of the asset) fails to include the option value, which is an opportunity cost in investment. Thus the 'price' for an investment should include an option value plus a direct NPV or investment cost-related value. Indecon and ComReg are in agreement on this point (see Para 4.15 from ComReg 08/105).

ComReg's own document, in paragraph 4.15, recognises this explicitly, "…the option value is added to the direct cost of the investment." More fundamentally, the charging of a migration fee is due to the realisation of the facts which unfold during the asset lives of the bitstream-specific assets. This is the very nature of a real option. Even if the correct rental price in terms of neoclassical investment theory is set such that, were the OAO to stay a bitstream customer such that the entire assets were recovered, they still would have had the option to migrate during the contract period. ComReg does not seem to dispute this as paragraph 4.13 says, "the decision to migrate involves optionality."

Under ComReg's paragraph 4.7, ComReg states that "ComReg must consider… if this value is already effectively reflected in eircom's pricing structure…" ComReg has apparently not assessed this. They merely state that if the WACC and assets lives are correct, then there can be no option value.

The existence of the option value is not dependent on the neoclassical investment theory-based costs. (See Para 4.15 ComReg 05/108.) ComReg's mere assertion that the option value is zero if the neoclassical investment theory-based price has been set correctly, has no basis.

ComReg's claim that, "there may be no reason for eircom to claim it has under recovered its costs or failed to make a reasonable return. However this is beyond the scope of the present consultation." Eircom have not claimed that they have under recovered or failed to make a reasonable return. What eircom are claiming is that there is a risk of under recovery if the bitstream prices are set as they have been in the past and the migration charge is zero.

The nature of such a possible under-recovery has been recognised in the economic literature of telecommunications regulation. For example, see Funston[10].

Another important point with regards to the option value and sunk investment cost recovery is the *ex ante* versus *ex post* argument and the uncertainty involved *ex ante*. The bitstream rental price, along with retail prices and the migration charge, were all set *ex ante*, that is, before eircom made sunk investments. *Ex ante*, neither eircom, nor OAOs nor ComReg could be sure when OAOs would migrate. If eircom had merely priced bitstream rental higher, and OAOs migrated early, then eircom would be straddled with sunk costs. If they did not migrate at all, and if eircom had included an adder to the rental price to include the expected probability (weighted) of migration, eircom would potentially over-recover their costs. The use of the migration charge, payable only if migration occurs, is a natural solution.

ComReg claim in paragraph 4.31[11] that "eircom's infrastructure costs should already be accounted for elsewhere, in its own retail prices and bitstream rental prices; therefore, there appears to be no stranded assets cost to be recovered through the migration charge." Again, the validity of this statement cannot be known *ex ante* because *ex ante* no-one knew for certain how long it would take an OAO to migrate. Regardless of the level of prices eircom set, if the OAO migrated after only say, 10 days, then eircom would likely have sunk costs. Conversely, if the OAO never migrated, then eircom would more than fully recover the asset costs.

[10] Funston, Kris, "Real Options and Telecommunications Regulation, Kris Funston (2006), Contributions to Economics", pgs 113-127, The Economics of Online Markets and ICT Networks

[11] The same point is made virtually verbatim in paragraph 4.25.

Eircom took a risk when agreeing to provide bitstream and making the sunk investments involved. ComReg agreed to the migration charge as part of the package. Eircom is not asking to be compensated for this risk up-front, but only if migration occurs before assets are depreciated. (Assuming that eircom continues to refresh the investment in the Bitstream infrastructure while the access seeker waits to exercise their option is there still a time limit on the option).

Even from an *ex post* perspective (which we submit is *not* the correct perspective here) ComReg merely assumes that eircom does not have sunk costs that are unrecovered because the 'level' of bitstream prices could have been higher. ComReg states in paragraph 4.25, "It could be assumed that eircom believes its retail prices are adequate in view of market conditions and possible future developments, including the risk that costs change or technology evolve causing some assets to become redundant." We assert that the more natural assumption is, "It might be assumed, that given that a migration charge is in place, that eircom believes its rental prices were adequate." In order to properly assess this, ComReg should investigate when migration *would have occurred* had there been *no* migration charge, and if bitstream rental prices had been set higher. In other words, ComReg should study what sunk costs and revenues would have likely been under the alternative regime, rather than merely assuming that if bitstream prices were higher, there would be no sunk costs. To our knowledge this has not been done and it certainly has not been presented by ComReg.

ComReg seemingly does not consider that the current structure of charges might have been optimal *ex ante*. By using a migration charge above zero and keeping bitstream rental prices lower than they otherwise might have been, *ex ante*, this could be the optimal pricing structure due to the uncertainty about how the market will evolve. The claim that it is suboptimal, *ex post*, when eircom has already made its sunk investments, has been neither fully investigated nor proved. The correct perspective is the *ex ante* perspective, i.e., before eircom has made its sunk investments.

Further, ComReg presents no evidence as to what the efficient pricing structure should be. They merely state, in paragraph 4.18, that the existence of the migration charge "…would distort the OAO's behaviour relative to what is optimal in view of the sunk costs and uncertainty involved in the situation." ComReg apparently assumes that OAO's investment is always optimal, when in reality, that may or may not be the case, and the determination of the optimal pricing structure or evidence thereof has not been presented. If the migration involves the idling of sunk investments, then that scenario is very likely suboptimal, i.e., idle high-tech investments being unused is rarely optimal. (The ComReg position here would be quite different. The reason that a price control is required is because of enduring eircom power in the upstream Wholesale Broadband Access market. When the control was set the market was still growing rapidly to the extent that it was not possible to forecast unit Bitstream costs accurately. In this environment a retail-minus control was deemed most appropriate. So ComReg probably feel that this form of control has allowed eircom to recover the put option value from the Bitstream prices through the indirect control exercised by reducing retail Broadband prices at a slower rate that the reduction in Bitstream unit costs.

3.3 Eircom is not perfectly free to set bitstream prices

Point #3, that eircom is 'perfectly free to recover whatever costs its wishes, as long as the appropriate discount from retail is maintained' is not a correct basis for ComReg to set the migration charge to zero. The notion that eircom can set bitstream prices however they like, is not true for the following reasons:

(1) Bitstream prices have already been set by eircom *ex ante* to making sunk investments. Prices for bitstream customers are at a level below what they otherwise would have been, had they known in advance that the migration charge would be set to zero. In other words, ComReg is now setting the migration charge to zero, having previously agreed it was not zero. Had ComReg set the migration charge to zero previously, then eircom would have arguably set rental charges for bitstream higher at that time.

(2) In addition, since eircom faces a retail-minus control, and if retail prices are close to competitive, then eircom is not free to recover its costs for bitstream specific investments due to competitive conditions that exist in the retail market. A mathematical demonstration of this is contained in the annexes. The intuition for this is as follows: eircom, when setting prices so as to maximise profits (as any producer would do) must set the combined margins for the retail and wholesale products. If the retail market is large and very competitive, then any price rises in the wholesale market (which will have to be passed on to the retail market to respect the retail-minus regulation) may cause losses that are proportionately larger than any gains from the price rise in the wholesale market. More specifically, the profit maximising producer prices both the wholesale and retail products in proportion to the inverse of the average elasticity of the two markets.

The ComReg assertion is flawed at the level of basic economics. The notion that even a monopolist can 'recover whatever costs its wishes' is misconstrued. Even a monopolist can only recover costs for which there is sufficient demand. If the monopolist invests in sunk equipment, and demand is not sufficient to recover these costs, then the costs will not be recovered. If a monopolist invests in sunk equipment, and technology evolves such that its advantage diminishes rapidly, then they may not recover all of their costs.

Eircom is not a monopolist in retail products. While no evidence as to the elasticities involved has been presented here, we assert that the retail market is likely to be sufficiently competitive for ComReg forego retail price control, and impose merely the retail-minus control on Bitstream prices to avoid the possibility of the margin-squeeze.

3.4 Additional technical points

In addition to these main arguments, ComReg makes a number of more technical critiques, including:

- ComReg questions the Indecon option method on a number of grounds, but most forcefully on the apparent insensitivity of the option value to the volatility.

- ComReg states, in paragraph 4.24, "…these assets are unlikely to be entirely redundant following migration as redeployment should be possible." This statement appears to ignore the fact that the Indecon estimates were made net of an allowance for redeployment, given to Indecon by eircom.
- ComReg's Executive Summary states, "ComReg is of the preliminary opinion that there cannot be any granting of any such option to the OAO at the time of the Intra Operator Migration and therefore there is no option value[12], that is, the option value is €0 (zero)."
- ComReg has perhaps confused the timing of the "Charging of the option for migration, with the 'granting' of the option". Eircom 'grants' OAOs the option when *eircom* initiates bitstream and makes the required investments, but 'allow the OAO the option of switching after a relatively short minimum contract period. Much of ComReg's arguments are based on their misapplication of this timing.[13]
- ComReg's arguments are flawed on a number of points of logic:
    - The lack of existence of an object tells us nothing about its value if it did exist (unless it is shown the two are mutually exclusive).
    - Likewise, the fact that the value might be low, tells us nothing in particular about existence. ComReg asserts that because they do not believe the put option exists, then the value must be zero.

[12] Here they use the correct term, option value, so we will work on this as what ComReg means when they say premium.

[13] Apparently, later, the ComReg document seems to have this concept correct, as it states, "Indecon believe that when an OAO moves from bitstream to Line Share or LLU with its customer, it benefits from an "American Put Option" as Eircom bitstream customers have been given an option to switch from Bitstream to LLU, by 'putting' the value of bitstream specific assets onto Eircom at any time between the inception of the contract and the expiry date."

- ComReg has stated that the option should be 'call option'. This may be true, but then ComReg merely asserts that the option is of zero value. Moreover, ComReg has not estimated the option value itself to determine the value is in fact zero, of either their own proposed call or the put. If the option is a call option, and it does have value, then the impact that eircom's sunk investment and allowing bitstream might lead to an option value seems to be something ComReg has not considered. For example, the call option might involve what is known as the 'truncation problem' which has been discussed by Funston.
- ComReg believes that the 'timing' of the 'charging' for the option gives an indication of the 'existence of the "granting" of the option'.
- ComReg states that eircom, "Cannot" have given an option, when in fact what they argue is that eircom 'does not' give an option. Logically, 'cannot' means it could not have happened, whereas the second is that it did not happen. The logical hurdle to prove the first is very high, as it would require ruling out every possible means by which eircom *could have* granted an option to OAOs. In fact, ComReg only point out *one case*, i.e., where they suggest that Indecon has confused the notion of puts and calls, which we have not.
- ComReg explicitly recognizes in their document the existence of the option, the document states, "ComReg believes that the option to migrate is held by the OAO before it invests." The timing is irrelevant. How they go on to conclude that the option does not exist is not clear.
- ComReg, confused by the timing of both investments by OAOs, and the granting and charging of the option, have determined that OAOs have a call option on additional investments to upgrade to full LLU. The arguments about the timing of investment and differences between calls and puts, is flawed because it assumes the existence of a call option implies the non-existence of a put option.

- ComReg states that because the option value seems insensitive to the estimated volatility, that this is indicative that Indecon may have done something wrong. In fact it is indicative of ComReg's lack of understanding of option valuation mathematics. The sensitivity of the option value to the volatility, commonly known as vega, is the derivative of the American put value closed form approximation with respect to volatility. We show later that this value can approach zero. Intuitively, this makes sense, as in general if the underlying price is far enough above or below the strike price (and the expiry date approaches), then the probability of exercise will approach either 1 or zero.

3.5 Existence of migration or switching charges in other jurisdictions and the use of real options in telecoms

The existence of migration charges and/or option value in telecoms jurisdictions is not novel.

For example, according the Funston, '…in New Zealand, the Commerce Commission (2002: 79) states that, "…the obligation to provide interconnection services removes the option for access providers to delay investment in their fixed PSTNs. If this option has a value, the costs of foregoing the option are a cost that should be reflected in interconnection prices". Further, in the UK, Ofcom (2005: Sect. 6.45) outlined an initial view that it should consider ways to estimate the value of a real option to delay investment—or what it refers to as a 'wait and see option'—for British Telecom's (BT's) next generation networks (NGNs).' Therefore, Ofcom and the NZ CC have explicitly recognised real options in access pricing arrangements.

4 Volatility

ComReg start their first point with the insensitivity of the option value to the volatility. We refute this point as follows.

It is true that, one often finds the option premium sensitive to the volatility, but the sensitivity in general can easily be low or zero. Intuitively, when the option is deep in the money (or deep out of the money), then the chance that one will always exercise, or exercise early (does not exercise) approaches 100% regardless of likely price movements.

It is likely that the stock market or implied volatilities are "lower" than individual project volatilities. The point is nonetheless moot, given ComReg's (true given the parameters) assertion that the value is not sensitive.

ComReg's assertion that these lead to the likely inappropriateness of the technique is generally incorrect.

The vega of a put option is the derivative of the option value with respect to volatility. The annexes show graphical depictions of this for the Black-Scholes European put, and show that the value has a lower limit of zero.

5 Conclusions

We conclude that ComReg has not provided sufficient justification to set the migration charge to zero. ComReg's rationale is based on misunderstanding and assumption. This document has laid forth Indecon's critique of ComReg's draft decision and consultation.

In their draft consultation document (08/105), ComReg makes a few technical critiques, but ComReg's key arguments can be summarised into three main points; they are:

1. OAOs possess a 'call option to invest' therefore, they 'cannot[14]' posses a put option.
2. There is 'no option value at all if asset lives and WACC are set correctly'. That is to say, that the existence of real options is irrelevant if regulated prices are set 'correctly' according to standard neoclassical investment theory criteria.
3. Eircom is 'free to set' bitstream prices at whatever level they like, and therefore should not be under-recovering their sunk costs; if they are, eircom should simply raise the price of bitstream.

All of these arguments are either incorrect or misconceived and we argue in detail why in the body of the report, but summarize here:

1. OAOs possess a 'call option to invest' therefore, they 'cannot[15]' posses a put option.
   a. The option to leave, abandon, quit, or exit a project is found to be a 'put' option in all the basic and primary sources on real options.
   b. The existence of the former tells one nothing about the non-existence of the latter unless is has been shown the two are mutually exclusive, which has not been done.

[14] ComReg 08/105, Executive Summary, "ComReg is of the preliminary opinion that there 'cannot' be any granting of any such option…."

[15] ComReg 08/105, Executive Summary, "ComReg is of the preliminary opinion that there 'cannot' be any granting of any such option…."

   c. In fact, the real options literature is full of the existence of multiple options for complex business decisions, and even compound options, so it is perfectly likely that a put and a call could exist together.

2. There is 'no option value at all if asset lives and WACC are set correctly'. That is to say, that the existence of real options is irrelevant if regulated prices are set 'correctly' according to standard neoclassical investment theory criteria.

   a. The very nature and existence of real options is precisely the point that neoclassical investment theory, and the "standard" regulatory pricing principles is likely to give the 'wrong' answer—a wedge exists between the pure NPV of the project and the efficient 'price'.

   b. ComReg again makes the logical error that if standard regulatory prices set based on neoclassical investment theory is correct, then there is 'no option value'. Again, unless they show that the two are mutually exclusive, then the first one tells one nothing about the true value of the option.

   c. ComReg's own document adheres to this in their discussion of the call option to invest.

3. Eircom is 'free to set' bitstream prices at whatever level they like, and therefore should not be under-recovering their sunk costs; if they are, eircom should simply raise the price of bitstream.

   a. This idea ignores the fundamental point that part of the sunk investments have already been made, contracts have already been fixed, etc, at prices that were commensurate with the migration charge's existence.

   b. Reducing the price to zero, having previously allowed it, *after* eircom has made sunk investments, could be construed as regulatory opportunism.

   c. Because eircom faces a retail-minus type price control, it is not likely that mere profit maximising behaviour leads them to set price equal to cost in *each* of the wholesale and retail markets. This is proved in the mathematical section of the annexes.

ComReg makes a number of more technical critiques of the Indecon valuation method and points of logic and conclusion. We discuss these in turn during the response document that follows.

In general, we believe ComReg's draft decision to set the bitstream migration charge to zero is without the necessary merit and detail required to reduce an existing charge to zero and based on a fundamental lack of understanding of the nature of the rationale for the charge (the real put option) and a failure to adhere to their duty to consider eircom's point of view in balance with the views of OAOs.

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7 Annex 1: mathematical annex

This annex shows that the optimal pricing decision of a producer facing a 'retail-minus' type regulation may involve not recovering all of the costs from the wholesale market if the retail market is competitive and the 'minus' is not set correctly.

Consider the producer who simultaneously maximises profits in a wholesale and retail market, but is subject to retail minus type regulation. The producer's profit function will be:

Equation 1:

$$\pi = (p_w - c_w)Q_w + +(p_r - c_r)Q_r$$
$$s.t. \quad p_w = p_r - M$$

Where p is the price, c is the unit cost, and Q is the quantity.

Substitution gives an equation in only the retail price:

Equation 2: $\pi = (p_r - M_w - c_w)Q_w + +(p_r - c_r)Q_r$

Maximising behaviour gives the following first order conditions:

Equation 3: $\frac{\partial \pi}{\partial p_r} = Q_w + (p_r - M_w - c_w)\frac{\partial Q_w}{\partial p_w}\frac{\partial p_w}{\partial p_r} + Q_r + (p_r - c_r)\frac{\partial Q_r}{\partial p_r} = 0$

Rearranging gives:

Equation 4: $\frac{Q_w(p_r - M_w - c_w)}{p_w}\frac{p_w}{Q_w}\frac{\partial Q_w}{\partial p_w} + \frac{Q_r(p_r - c_r)}{p_r}\frac{p_r}{Q_r}\frac{\partial Q_r}{\partial p_r} = -(Q_w + Q_r)$

or

Equation 5:

$$\frac{Q_w}{(Q_w + Q_r)}\frac{(p_r - M_w - c_w)}{p_w}\frac{p_w}{Q_w}\frac{\partial Q_w}{\partial p_w} + \frac{Q_w}{(Q_w + Q_r)}\frac{(p_r - c_r)}{p_r}\frac{p_r}{Q_r}\frac{\partial Q_r}{\partial p_r} = -1$$

The outer term of the quantity share of the size of the retail or wholesale market.

Equation 6:

$$\frac{Q_w}{(Q_w + Q_r)} \frac{(p_r - M_w - c_w)}{p_w} \frac{p_w}{Q_w} \frac{\partial Q_w}{\partial p_w} + \frac{Q_w}{(Q_w + Q_r)} \frac{(p_r - c_r)}{p_r} \frac{p_r}{Q_r} \frac{\partial Q_r}{\partial p_r} + 1 = 0$$

Suppose the retail market is nearly perfectly competitive. As this happens, the elasticity of demand will approach infinity, so the margin in the retail market must approach zero for the above to hold.

Equation 7: $\frac{Q_w}{(Q_w + Q_r)} \frac{(p_r - M_w - c_w)}{p_w} \frac{p_w}{Q_w} \frac{\partial Q_w}{\partial p_w} = -$

Defining the elasticity, epsilon, and s as the 'share' of wholesale gives:

Equation 8: $s_w \frac{(p_r - M_w - c_w)}{p_w} = \frac{1}{s_w \varepsilon_w}$

However, since the retail market is competitive, then the retail price must equal the cost.

Equation 9: $s_w \frac{((c_r - c_w) - M_w)}{p_w} = \frac{1}{s_w \varepsilon_w}$

However, if the margin M is exactly equal to the difference between retail cost and wholesale cost, then the above will be zero.

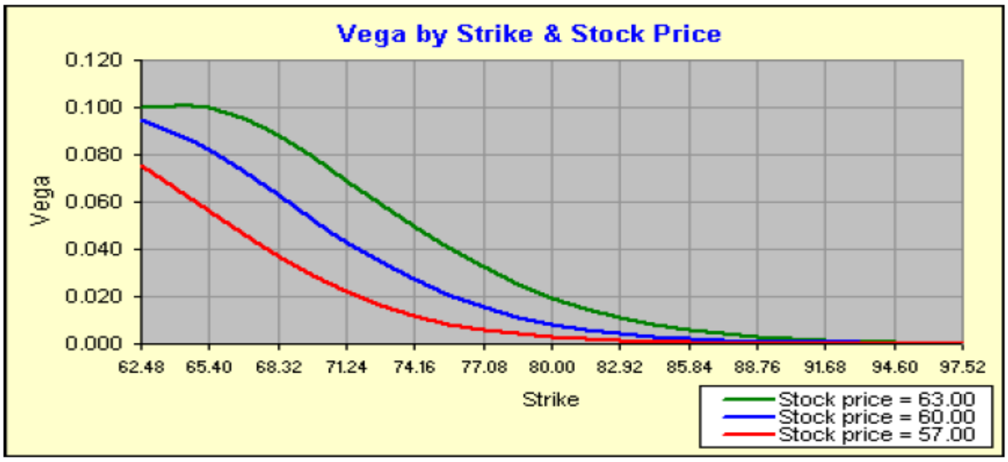
We are not aware of whether this has been investigated fully by ComReg.

8 Annex 2

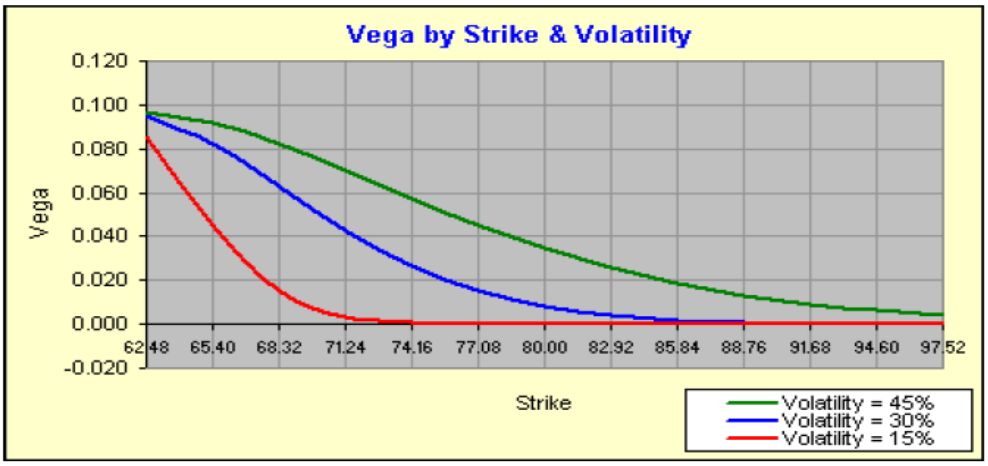
The sensitivity of the option value to the volatility is function of the terminal conditions of the partial differential equation used to solve the Black-Scholes formula. As the option approaches maturity, or as the strike price gets 'very' far above (below) the underlying price for a put (call), the likelihood of exercise approaches unity. Likewise, if the underlying price is very far above (below) the exercise price for a put (call), then the likelihood of exercise will approach zero. The intuition for this is that when the option is deep in the money or out of the money, then even with high volatility it becomes increasingly unlikely that the exercise decision will be changed by the revelation of uncertain events, so the option approaches its intrinsic value.

The following charts come from the Hoadley Options Software and Investments add-ins. They are done for a Black-Scholes European option, but are analogous to the American. We've set the interest rate to 4%, the stock price to 60, and the strike price to 80 for a put. The qualitative result is the same, however, in all cases. The 'Vega', which is the sensitivity of the option price to changes in volatility, goes to zero.

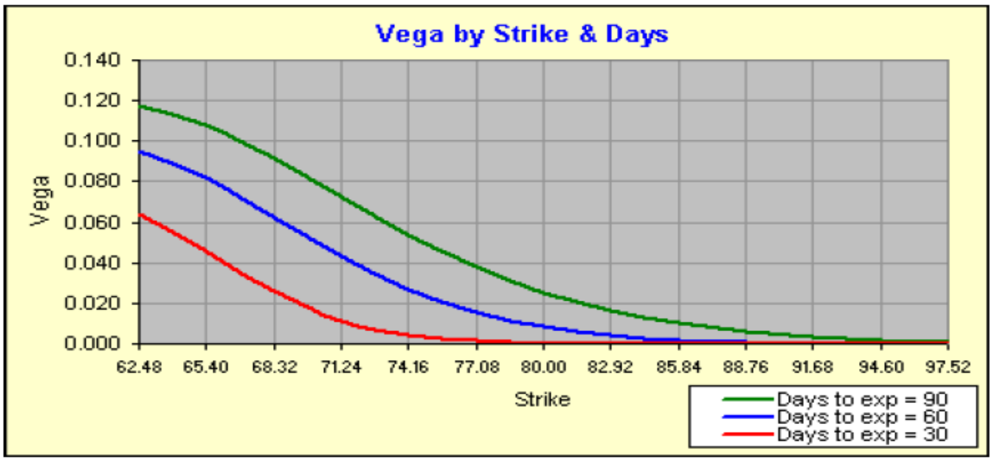
The graph below shows the Vega goes to zero as the strike price rises above the underlying. It goes to zero *faster* as the underlying (stock) price gets lower (since this is a put, but the intuition would be the same for a call).



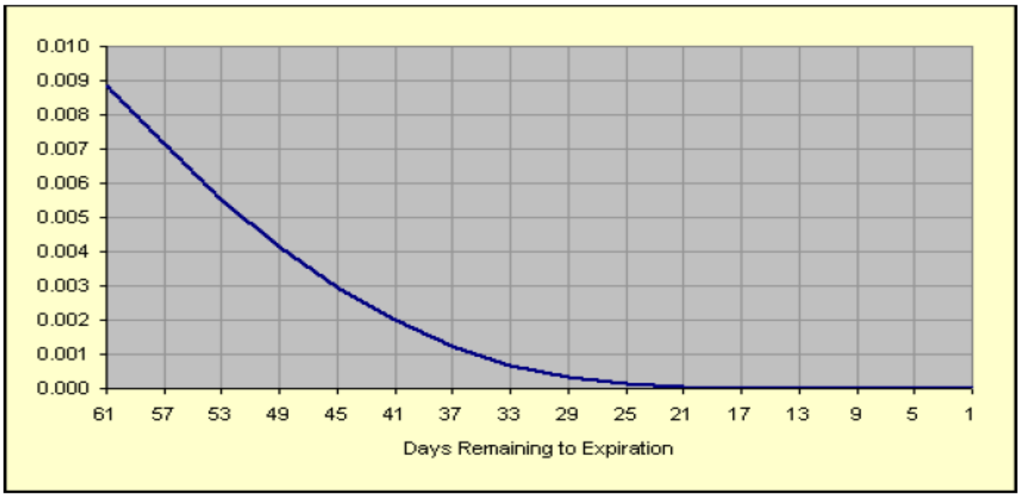
The graph below shows the Vega goes to zero as the strike price rises above the underlying. It goes to zero *faster* as the volatility falls.



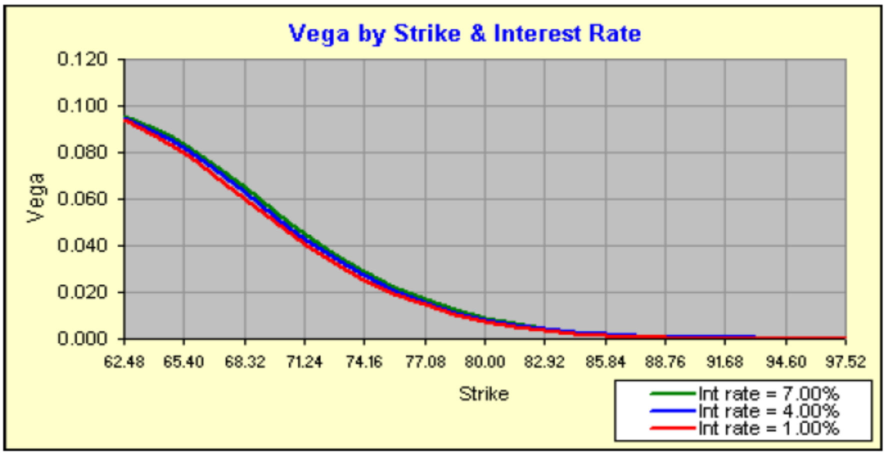
The graph below shows the Vega goes to zero as the strike price rises above the underlying. It goes to zero *faster* as the days to expiry falls. This is intuitive as with a longer time to expiry, the possibility that the exercise decision changes, and the value of the option would change due to changes in the underlying, increases; so the value of the option should be more sensitive. The below is for a put, but the intuition is the same for a call. More fundamentally, the Vega goes to zero as time to expiry goes to zero.



Put Option Vega by Time Remaining to Expiry



The graph below shows the Vega goes to zero as the interest rate changes. Vega is insensitive to changes in interest rates.



2 BT

Non-Confidential Submission

Reference: Submission re Comreg 08/105

Intra Migration Premium

BT response to the ComReg Consultation

19 February 2009

1. Overview

BT welcomes this consultation and agrees that a key to the growth of broadband in Ireland has been the competitive landscape provided by Other Authorised Operators ('OAOs').

BT currently purchases Bitstream and wishes to offer further differentiation to its retail and wholesale customer by opting to invest more heavily in our own equipment so as to avail of Local Loop Unbundling ('LLU') or Line Share. This move to unbundled products would give BT greater flexibility in the development of its products and would result in more innovative retail products of benefit to consumers.

A key facilitator in moving from one wholesale service platform to another is the ability to migrate consumers seamlessly from, say, *eircom's* wholesale bitstream service to the Line Share service. To date, the premium charged by *eircom* for migrating consumers from one wholesale service to another is excessive and this has prevented BT from moving consumers to the unbundled products as the investment payback is too long.
BT concurs with ComReg's view that there is no justification for any uplift to the migration charge to account for uncertainty in utilisation rates of assets associated with Bitstream access services provided by *eircom*.

Comreg suggests that the OAO decision to move to LLU has Call option characteristics and this is correct; OAOs have to decide when to invest, and there is option value associated with 'waiting to invest'. Indecon suggests the contract for Bitstream access, in which the OAO can choose to terminate at any time, has 'Put' option characteristics, and this is also correct. However, the existence of the 'Put' option characteristic does not in itself motivate a positive migration charge, and Indecon is incorrect in claiming that it does.

The problem of setting the correct prices for bitstream access, for the copper loop, and for a possible migration charge (or subsidy) clearly has complex options characteristics. The key to understanding this problem is to understand the decision faced by OAOs and how this decision is affected by the structure of prices. That is, prices for Bitstream access, for migration charge, and for LLU need to be optimised simultaneously in the modelling of the migration decision and this optimisation needs to be cognisant of all of the objectives which NRAs are tasked with.

The Indecon modelling analysis is seriously defective because it takes no account of : (a) the incentive of OAOs to defer investment (a point raised by ComReg); and (b) how price setting influences the timing decision of the OAO. These are serious modelling defects and as a consequence, the conclusions Indecon reach cannot be taken seriously. A fuller description of the economics of the scenario is contained at Annex 1.

The analysis at Annex A shows that even if the option effects are material, it would be wholly inappropriate to set a positive migration charge. The essential reasons are as follows. Firstly, if a lease contract has an option for the lessee to terminate, it is normal to price this through setting a higher per period price (in this case the Bitstream price). The price set in a competitive market will be set so as to recover the cost of the asset given the expected utilisation rate for it. It is possible to set a lower per unit price and levy a termination charge (a migration charge in this case), but this will clearly incentivise OAOs to delay investment in LLU. As Comreg notes, OAOs get option value associated with ‘waiting to invest’ – this will if anything lead to OAOs unduly delaying investment in the first place. Any positive migration charge will simply exacerbate this tendency.

It is BTs view therefore that it is better for *eircom* to get a return for its Bitstream service purely from the Bitstream price and this price will reflect the expected utilisation rate of the assets involved[1]. It may well be that the current Bitstream price is already set to take account of the expected utilisation rate. It should be noted that if the Bitstream price is already based on an expected utilisation rate the setting of an additional migration charge would be double counting – that is, a case of excessive pricing for the service[2].

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[1] Providing appropriate margin squeeze tests remain in place given the upstream and downstream dominance of *Eircom*.

[2] That is, if the current per period bitstream price already takes account of potential down time (idle periods before assets can be re-deployed) and also the risk of a potentially shorter economic life for the asset than its ‘physical’ life. Specifically, BT does not advocate subsidy from incumbents to entrants or vice versa. The fact that entrants acquire an option to delay their own investments does not confer any market power on them, either individually or collectively. Rather it is the case that they have a choice within the broader context of the SMP operator having market power and the attainment of effective competition means that this choice is a suitable policy to achieve that goal. By the same token, the SMP operator should be able to recover its costs and make an appropriate return on capital taking into account the risks involved.

In any case, in practice, it appears the utilisation rate may not be significantly adversely affected by LLU migration as there is significant latent demand for Bitstream services – that is, *eircom* should be able to redeploy bitstream assets fairly quickly following LLU migration by an OAO. If so, the adjustment for utilisation rate is likely to be fairly small.

The above analysis (discussed in more detail in the Annex) suggests that it is unlikely that a positive migration charge is sensible. However there are other considerations which also tend to reinforce this view. In particular:

- A positive migration charge will inevitably act as a barrier to entry, falling only on entrants and not on the incumbent operator which, in this case, will be able to maintain not only upstream dominance, but also downstream dominance. This would be to the considerable detriment of consumers in what is, by international standards, an underdeveloped market.

- The perceived dis-benefits to the incumbent of OAOs migrating to LLU is not self evident as additional market entry using own facilities will raise general awareness of broadband services to the potential benefit of the incumbent through stimulation effects in the marketplace. In other words, there are likely to be some off-setting benefits to *eircom* which are not considered in the *eircom* submission.

- There are good grounds for considering that the incumbent faces much less overall risk than entrants given its dominant position, and that in fact there is comparatively little risk of capacity stranding. Not only may assets be re-deployed (as discussed above), but in the longer term, *eircom* may acquire commercial freedoms following cessation of SMP status from the increased activity of OAOs themselves.

ComReg consultation questions and BT answers are set out below.

2. Response to Consultation Questions

Q. 1. Do you agree or disagree with what is classified as Intra Migration? Please explain your response in detail.

A. 1. It is BT's opinion that a scenario is missing which is; OAO X Bitstream with non OAO X WLR to ULMP/GLUMP and this should be included.

Q. 2. Do you agree or disagree that the premium for Intra Migration should be reviewed? Please explain your response in detail.

A.2. BT agrees that the premium for Intra Migration should be reviewed. We have lobbied for a review since the time that the charge was first introduced. The charge is a barrier to BT's ability to offer its customers a full range of innovative services and choices due to the pay back time needed to mitigate the premium. The premium is grossly excessive, has no basis and could be regarded as anti-competitive.

Q. 3. Do you agree or disagree with ComReg's preliminary opinion that there is no option being bought by the OAO for Intra Migration?
Please explain your response in detail.

A.3. BT agrees with ComReg's opinion that there is no option being bought by the OAO for Intra Migration.

We agree with ComReg's analysis that reaches that conclusion.

The analysis presented by ComReg shows that the OAO freely enters into a contract with *eircom* for bitstream access which can be terminated. The option to terminate the contract at any point in time is normally described in the academic literature as a Put option. However, the flexibility in a lease contract that can be terminated by the lessee is normally priced into the per period price paid (the Bitstream price in this case). In a competitive market, the Bitstream price that reflects this would be the price that is expected to recover the value of the original investment – the price would be higher, the lower the expected utilisation rate.

However, ComReg is correct in its assessment that there should be no positive migration charge, for the reasons explained in this submission. If a positive migration fee was levied, this would necessarily entail a lower price for Bitstream access and this pricing combination increases the incentive for undue delay in LLU migration. That is, because OAOs gain (Call) option value from 'waiting to invest', there is already some incentive for them to delay LLU migration, and a positive migration charge will exacerbate this tendency.

Q. 4. Do you agree or disagree that the appropriate mechanism for *eircom* to recover such a migration option value is in the current Bitstream price as set by the current retail minus price control? Please explain your response in detail.

A.4. BT agrees that the appropriate mechanism for *eircom* to recover such a migration option value is in the current Bitstream price as set by the current retail minus price control.

We agree with ComReg's analysis that reaches that conclusion; *eircom* has in its own gift the ability to recover such a migration option value but has chosen not to so do preferring to place excessive prices on OAOs which it knows will stifle competition.

Q. 5. Do you believe any issue associated with stranded Bitstream assets following a migration from Bitstream should be dealt with under a review of Bitstream pricing planned for 2009 where a cost plus regime will be considered? Please explain your response in detail.

A.5. BT agrees that any issue associated with stranded Bitstream assets should be dealt with in the planned review of Bitstream pricing. From the original levying of the migration premium *eircom* argued that it was to cover stranded Bitstream assets but yet it seems that *eircom* has been unable to demonstrate or quantify that to date. Therefore to cover the matter in the planned review would be appropriate.

There appears at present more likely to be market 'excess demand' for Bitstream access. Thus it seems unlikely that there is any significant risk of Bitstream stranding at present or in the near to medium term future. The data available suggests that *eircom* faces growing demand for the Bitstream service, and that any migration to LLU can be 'backfilled' by new customers taking up their Bitstream service. This means the allowance in Bitstream price required to compensate for the possibility of future falls in utilisation rates (falls in demand for the service) are likely to be relatively small.

BT does not support a retrospective assessment if and when the regulatory remedies are changed as this would undermine confidence in the regulatory regime itself.

Q. 6. Do you agree or disagree that if the current Intra Migration Premium were to continue for Intra migrations (for example from Bitstream to LLU), that this could have a negative impact on investment by OAOs in retail broadband over the medium to long term? Please explain your response in detail.

A.6. BT agrees that should the current premium continue then this would have a negative impact on our investment.

As a matter of logic, the higher the Intra Migration Premium, the lower the likely level of investment in LLU by OAOs. The analysis (see Annex A) suggests that any positive migration charge is likely to have adverse long term welfare effects. It seems clearly preferable to recover the value of Bitstream assets through setting an appropriate bitstream price (one that thus reflects expected utilisation rate over time).

Q. 7. Do you agree or disagree that an Intra Migration Premium is contrary to the principles set out in paragraph 2.2? Please explain your response in detail.

A.7. BT agrees that the Intra Migration Premium is contrary to each and every one of the principles set out in paragraph 2.2:

- Promote competition;
- Promote the interests of users within the community
- Ensure that there is no distortion or restriction of competition
- Encouraging efficient investment in infrastructure and promoting competition
- Encouraging access to the internet at a reasonable cost to end users.

It is our opinion that on all counts an excessive Premium levied by an incumbent that prevents investment in infrastructure and denies consumers choice is, amongst other things, a distortion and restriction of competition.

Q. 8. If you believe a premium should be charged for Intra Migration (for example from Bitstream to LLU), what premium would you believe is appropriate and when should this premium be paid by OAOs? Please explain your response in detail.

A.8. As set out above BT does not believe a premium should be charged and that it should be set to zero.

Q. 9. Do you have any further views on the theory of option value that has not been considered by ComReg when setting regulated wholesale prices? Please explain your response in detail.

A.9. An analysis of the migration decision is presented in more detail in the Annex. Our submission explains why we concur with the Comreg findings concerning migration charges.

Q. 10. Do you have any further views on the Intra Migration Premium methodology as set out in *Eircom*'s report published as 08/105a, other than that set out by ComReg in this consultation? Please explain your response in detail.

A.10. See the answer to question 9.

Q. 11. Do you have any experience of, or know of, any similar charging mechanism using an option value in other European member states?

Please explain your response in detail.

A.11. BT is not aware of any other Member State NRA incorporating an option value explicitly into regulatory WACC or charges. Some allowance for utilisation risks have on occasion been made by Ofcom however which are (according to Ofcom) to compensate for generic risks of underutilisation of sunk assets which would arise in a competitive marketplace.

Q.12. Do you agree or disagree that there are no other costs for consideration in the Intra Migration Premium? Please explain your response in detail.

A.12. We agree that there are no other costs for consideration in the Premium.

Q. 13. Do you agree or disagree with ComReg's proposed pricing for the Intra Migration Premium being set at €0(NIL)? Please explain your response in detail.

A. 13. Yes BT fully agrees. The rationale for this is detailed in our submission above.

Q. 14. Do respondents believe that the draft text of the proposed decision instrument is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please elaborate on your response.

A.14. We would recommend that to avoid any confusion that it should be specified in the instrument that the Premium shall be set to zero on the effective date of the decision notice.

end

3 Vodafone

Vodafone Response to the ComReg Consultation and Draft Decision on the Intra Migration Premium

Ref. ComReg Document 08/105 Response Date: 20 Feb 2009

Introduction

Vodafone welcomes the opportunity to respond to this consultation on the Intra Migration Premium. Our views on ComReg's proposals are set out fully in response to the consultation questions below.

Response to Consultation Questions

Q.1. Do you agree or disagree with what is classified as Intra Migration? Please explain your response in detail.

Yes. Vodafone agrees with the definition of Intra Migration and the classification as set out in section 2.3 of ComReg's consultation document.

Q2. Do you agree or disagree that the premium for Intra Migration should be reviewed? Please explain your response in detail.

Vodafone agrees that the premium for Intra Migration should be reviewed. The current Intra Migration Premium of €47 is unjustified, excessive, and deters migration between eircom's wholesale access products where there is no change in the customer/operator relationship. In particular the current level of the charge inhibits migration from wholesale access products that are downstream in the value chain, such as SB-WLR and Bitstream, to wholesale access products that are further upstream and require much greater infrastructure investment on the part of OAOs, such as Line Share and ULMP. The current level of the charge is therefore acting as a significant artificial obstacle to OAOs enhancing their service offerings to their existing customers on the basis of LLU wholesale inputs (ULMP and Line Share) to the detriment of competition.

Q3. Do you agree or disagree with ComReg's preliminary opinion that there is no option being bought by the OAO for Intra Migration? Please explain your response in detail.

Vodafone agrees with ComReg's preliminary opinion that there is no option being bought by the OAO for Intra Migration for the reasons set out by ComReg in section 4 of the consultation document.

Even if there were a significant put option, eircom provides this at the point at which Bitstream is sold (and the claimed put option is provided), not at the point of migration, and there are no option costs to eircom at this point.

Q4. Do you agree or disagree that the appropriate mechanism for Eircom to recover such a migration option value is in the current Bitstream price as set by the current retail minus price control? Please explain your response in detail.

Vodafone does not believe that there are any significant costs to be recovered by eircom as most of the relevant assets in which eircom has invested are either still used in the provision of LLU or can be redeployed with other Bitstream customers or even eircom retail customers. However Vodafone considers that any migration option value that is present is currently fully recovered by eircom in the current Bitstream price, which eircom currently determines given its freedom to set the retail price of its broadband services in the context of the present retail minus price control. Vodafone agrees that the Bitstream price as set by the current retail minus price control is the appropriate mechanism to recover any migration option value.

Q5. Do you believe any issue associated with stranded Bitstream assets following a migration from Bitstream should be dealt with under a review of Bitstream pricing planned for 2009 where a cost plus regime will be considered? Please explain your response in detail.

Yes. Vodafone considers that it would be appropriate to consider the issue of any stranded Bitstream assets in the context of the planned review of Bitstream pricing.

Q6. Do you agree or disagree that if the current Intra Migration Premium were to continue for Intra migrations (for example from Bitstream to LLU), that this could have a negative impact on investment by OAOs in retail broadband over the medium to long term? Please explain your response in detail.

Vodafone strongly agrees that if the current Intra Migration Premium of €47 were to continue that it would adversely affect investment by OAOs in retail broadband over the medium to long term. The current Intra Migration Premium, particularly in the context of the other significant connection and miscellaneous charges, will materially reduce the business case for investment in LLU over the medium to longer term.

Q7. Do you agree or disagree that an Intra Migration Premium is contrary to the principles set out in paragraph 2.2? Please explain your response in detail.

Vodafone agrees that an Intra Migration charge based on a claimed migration option value is contrary to the principles set out in paragraph 2.2. However Vodafone considers that an Intra Migration charge set to reflect any incremental costs incurred by eircom that are triggered by facilitating Intra Migration requests, and that are not already recovered in other charges, would be consistent with the principle of cost causation and would not be contrary to the principles set out in paragraph 2.2.

Vodafone does not have detailed knowledge of the incremental costs, if any, that are relevant to processing Intra Migration requests by eircom and no information regarding these has been provided by other respondents to date. Any incremental costs claimed to be incurred as a result of Intra Migration requests by OAOs must be fully justified by those undertakings that submit them.

Vodafone considers that if there are incremental costs directly related to the processing of migration requests then these are likely to be very low, and far below the current Intra Migration Premium of €47.

Q8. If you believe a premium should be charged for Intra Migration (for example from Bitstream to LLU), what premium would you believe is appropriate and when should this premium be paid by OAOs? Please explain your response in detail.

Please see the response to question 7.

Q9. Do you have any further views on the theory of option value that has not been considered by ComReg when setting regulated wholesale prices? Please explain your response in detail.

Q10. Do you have any further views on the Intra Migration Premium methodology as set out in Eircom's report published as 08/105a, other than that set out by ComReg in this consultation? Please explain your response in detail.

Q11. Do you have any experience of, or know of, any similar charging mechanism using an option value in other European member states? Please explain your response in detail.

Q12. Do you agree or disagree that there are no other costs for consideration in the Intra Migration Premium? Please explain your response in detail.

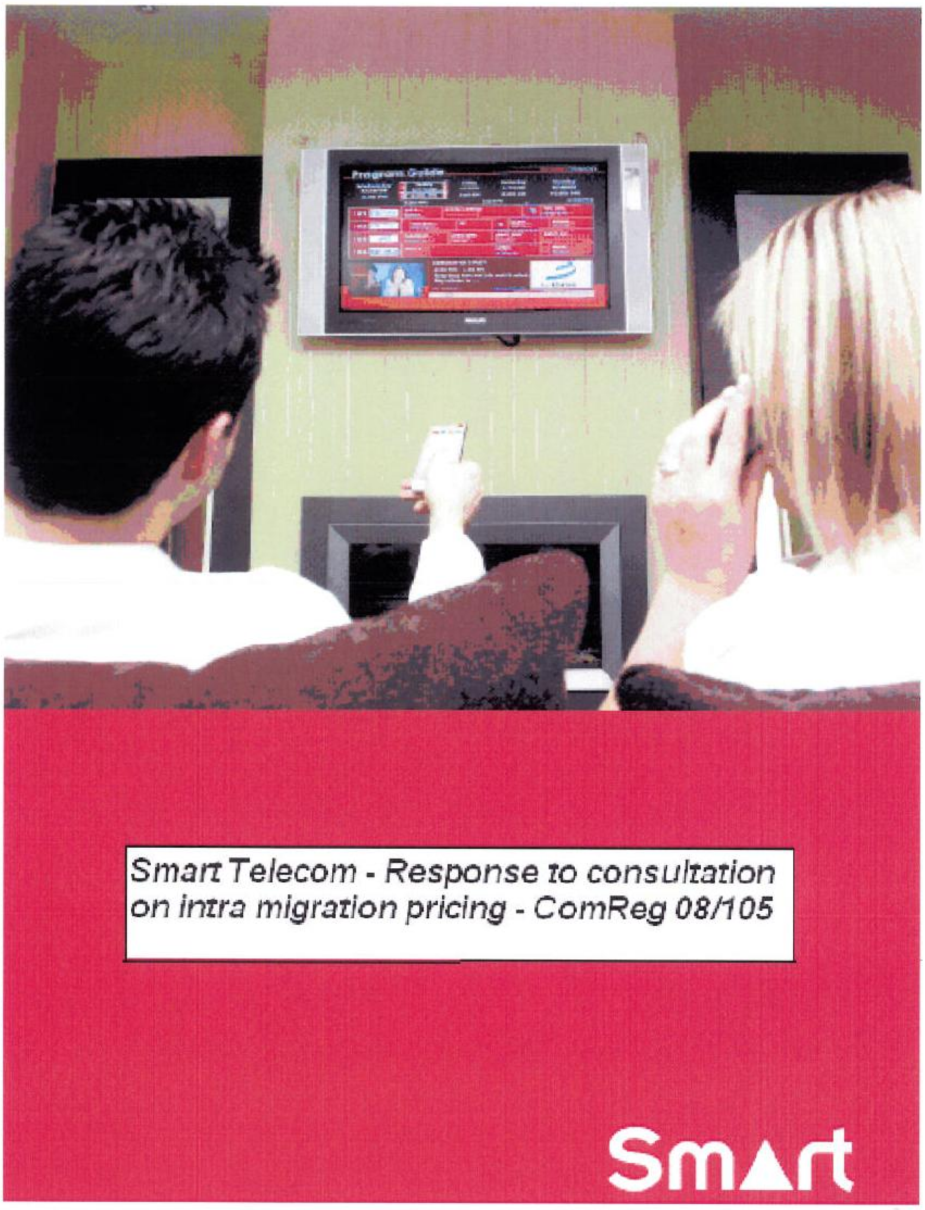
Vodafone considers that it is possible that there are incremental costs associated with the facilitation of Intra Migration requests that may not be recovered in other charges. If robust evidence is provided by eircom or other undertakings in response to the consultation document that such incremental costs are incurred, that they are not already recovered elsewhere, and that the level of the costs claimed is accurate, then this should be considered by ComReg in the setting of an Intra Migration charge.

Q13. Do you agree or disagree with ComReg's proposed pricing for the Intra Migration Premium being set at €0 (NIL)? Please explain your response in detail.

Q14. Do respondents believe that the draft text of the proposed decision instrument is from a legal, technical, and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please elaborate on your response.

Yes.

4 Smart Telecom



John Quinn
Director of regulatory affairs
Smart Telecom Holdings Ltd
3300 Lake Drive
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Dublin 24

Mr. Stephen Brogan
Commission for Communications regulation
Lower Abbey St
Dublin 1

February 2009

Intra Migration Premium – Consultation reply

Dear Stephen,

Smart Telecom welcomes Comreg's consultation on "Intra Migration Premium – Consultation and draft decision".

Main Points :-

- **Smart Telecom offers next generation services over LLU including Voice, Data, TV and Business services.**
- **Smart Telecom is supportive of ComReg's position.**
- **With only circa. 20,000 unbundled paths in Ireland today – it is true to say LLU has failed to date and this must be remedied. A portion of this failure is due to the intra migration premium.**
- **This is the last opportunity for LLU to succeed in Ireland and failure to grasp this opportunity will come at the detriment of competition in the market.**
- **We look forward to Comreg's decision and future direction on this matter.**

Kindest Regards,

John Quinn

Answers to consultation questions

Q. 1. Do you agree or disagree with what is classified as Intra Migration? Please explain your response in detail.

Smart Telecom agrees with the seven (6 + 1 reverse option for each of the six) definitions of an "intra migration". The options outlined cover all options of intra migration which are possible and required in the market at this time. Smart would also suggest that scope for further definition is left open as new products and services come to the market.

Q. 2. Do you agree or disagree that the premium for Intra Migration should be reviewed? Please explain your response in detail.

Smart Telecom agrees that the premium charged for Intra Migrations should be reviewed at this time. A complete review should now be carried out to ensure that the real costs are in line with those incurred.

Q. 3. Do you agree or disagree with ComReg's preliminary opinion that there is no option being bought by the OAO for Intra Migration? Please explain your response in detail.

Smart Telecom agrees that no "option" or "put" is being bought be the OAO for Intra Migration. Our view and rationale is similar to that expressed by ComReg. Indeed Smart Telecom is somewhat confused as to how an instrument such as an "American Put Option" which is usually used in the purchase and selling of financial instruments and commodities by speculators in such markets is even relevant to the argument on an Intra Migration premium. It should also be noted that unlike a European Put Option there is no general formula used in an American Put option but a choice of models to estimate the price. Indeed the model chosen in the Indecon report also includes a modification for an early exercise premium - It should be noted that American put options are rarely exercised early with holders preferring to trade them or sell them on at a point in time rather than exercise. Further the model makes no allowance for those OAOs who may hold a Bitstream minimum term contract with eircom. This makes the model flawed immediately as a sound basis for calculating the value for something as defined as a regulated telecommunications product or product sub-set. OAOs buy and sell products from eircom wholesale to service end customer needs not to trade such products inter-alia with the intent being speculative gain on rising or maintaining values. It is our view that such an argument is simply not relevant to the market in what is effectively a service or utility product. Finally a put option is not in it's own right a means to and end, it is frequently used in combination with an option spread, by way of example. We believe that using a put option to define an intra migration premium is incorrect, irrelevant and simply an unrealistic justification.

Q. 4. Do you agree or disagree that the appropriate mechanism for Eircom to recover such a migration option value is in the current Bitstream price as set by the current retail minus price control? Please explain your response in detail

Smart Telecom agree that the appropriate method to recover the option value, if indeed one exists as defined by the put option, is in the current Bitstream price as both connection and disconnection charges apply to the existing LLU and Bitstream portfolio.

Q. 5. Do you believe any issue associated with stranded Bitstream assets following a migration from Bitstream should be dealt with under a review of Bitstream pricing planned for 2009 where a cost plus regime will be Considered?

Smart Telecom support this view and it is the most appropriate and accurate way to reflect the cost of such a scenario arising, if indeed it is likely to arise at all. Given the useful life of an asset, the current lack of LLU and a move to NGNs we would be very skeptical that such a situation could arise to the degree that difficulties would be encountered.

Q. 6. Do you agree or disagree that if the current Intra Migration Premium were to continue for Intra migrations (for example from Bitstream to LLU), that this could have a negative impact on investment by OAOs in retail broadband over the medium to long term? Please explain your response in detail.

Smart Telecom strongly support this view. The current Intra Migration Premium is a complete disincentive for OAOs to invest in Infrastructure even where they may have an existing Customer base placed lower on the ladder of investment (Bitstream of WLR for example)

Q. 7. Do you agree or disagree that an Intra Migration Premium is contrary to the principles set out in paragraph 2.2? Please explain your response in detail

Smart Telecom strongly support this view.

The Current Intra Migration Premium does the following:-

- Limits competition in a very calculated way
- Hinders the interests of users in the community
- Ensures that competition is distorted and restricted
- Is a disincentive to investment
- Forces higher costs to operators and subsequently end users

Q. 8. If you believe a premium should be charged for Intra Migration (for example from Bitstream to LLU), what premium would you

believe is appropriate and when should this premium be paid by OAOs? Please explain your response in detail

Smart Telecom do not believe a premium should be charged and in fact in some instances, where it is known that a line already supports broadband, the connection charge for LLU (GLUMP ULMP) or Bitstream should be lower as it is almost guaranteed that no additional engineering time will be needed for initial fault finding or complications which may arise.

Q. 9. Do you have any further views on the theory of option value that has not been considered by ComReg when setting regulated wholesale prices? Please explain your response in detail

Smart Telecom has no further views on this other than those already expressed.

Q. 10. Do you have any further views on the Intra Migration Premium methodology as set out in Eircom's report published as 08/105a, other than that set out by ComReg in this consultation? Please explain your response in detail.

Smart Telecom has no further views on this other than those already expressed.

Q. 11. Do you have any experience of, or know of, any similar charging mechanism using an option value in other European member states? Please explain your response in detail.

Smart Telecom knows of no other instance of such a charging mechanism being used in another EU member state or indeed anywhere. Smart Telecom would however state that we do not have full visibility of every market, simply that we have never heard of such a mechanism being used.

Q. 12. Do you agree or disagree that there are no other costs for consideration in the Intra Migration Premium? Please explain your response in detail.

Smart Telecom knows of no other costs that need to be considered for an intra migration premium and would refer ComReg to the answer provided in answer 8

Q. 13. Do you agree or disagree with ComReg's proposed pricing for the Intra Migration Premium being set at €0(NIL)? Please explain your response in detail.

Smart Telecom agree with ComReg's proposed price point of Zero (€0) and would refer ComReg to the answer provided in question 8.

Q. 14. Do respondents believe that the draft text of the proposed decision instrument is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please elaborate on your response

Smart Telecom agrees that the draft text is; from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed.

5 Magnet Networks

Intra Migration Consultation Questions.

Magnet Networks are encouraged by Comreg identifying that the Intra Migration fee charged by eircom is penalising OAO's. Magnet Networks hopes that the decision emanating from this consultation will be implemented swiftly after the closure of this consultation period. Magnet Networks feels that the reduction in the Intra Migration charge is a long time coming and would help assist in the further roll out of lineshare products to customers within Magnet Networks LLU footprint.

Q. 1. Do you agree or disagree with what is classified as Intra Migration? Please explain your response in detail.

Magnet Networks agree with ComReg's classification of intra migration.

Q. 2. Do you agree or disagree that the premium for Intra Migration should be reviewed? Please explain your response in detail

Magnet Networks agrees that the premium should be reviewed as it is currently too high and is acting as a barrier to moving customers up the broadband value chain.

Q. 3. Do you agree or disagree with ComReg's preliminary opinion that there is no option being bought by the OAO for Intra Migration? Please explain your response in detail.

Magnet Networks agree with ComReg's preliminary opinion that there is no option being bought by the OAO for Intra Migration. When an OAO decides to invest in LLU it does a cost analysis. After this analysis it contacts eircom and signs an agreement to unbundle an exchange. At the signing of this agreement the operator obtains a call option which allows an OAO, once it feels it is the correct time, to call on eircom to sell the LLU product to them. In the meantime, whilst the OAO is utilising eircom's bitstream, eircom is benefitting from the premium of that call option. Thus, the option had been bought when purchasing the agreement to unbundle the exchange and not at the actual migration stage. The migration is just the OAO exercising that option already purchased.

Q. 4. Do you agree or disagree that the appropriate mechanism for Eircom to recover such a migration option value is in the current Bitstream price as set by the current retail minus price control? Please explain your response in detail.

Magnet Networks agree that the appropriate mechanism for eircom to recover such a migration option is through the current bitstream price. Magnet Networks believes that the OAO should not be penalised for moving a broadband customer up the broadband value chain. The OAO has investing in unbundling the exchange and the Intra Migration charge further penalises them.

Q. 5. Do you believe any issue associated with stranded Bitstream assets *following a migration from Bitstream should be dealt with under a review of Bitstream pricing planned for 2009 where a cost plus regime will be considered? Please explain your response in detail*

Magnet Networks agree that any issue associated with the stranded bitstream assets should be dealt with in a further consultation. Through this further consultation each party can give ideas in relation to how to utilise the assets.

Q. 6. Do you agree or disagree that if the current Intra Migration Premium were to continue for Intra migrations (for example from Bitstream to LLU), that this could have a negative impact on investment by OAOs in retail broadband over the medium to long term? Please explain your response in detail.

If the current intra migration premium were to continue Magnet Networks would not upgrade its bitstream customers to either lineshare or full LLU. Currently, Magnet Networks has failed to implement a migration project due to the high cost of migrating a customer to lineshare or full LLU. Magnet Networks has bitstream customers within their LLU footprint but due to this premium these customers will not be migrated as it does not make economic sense to migrate them.

Intra Migration ROI.

	Bitstream cost (Average)	Line share cost	Difference	Cost to migrate	payback in months
	€13.96	€8.42	€5.54	€48.50	9
	€13.96	**€8.42**	**€5.54**	**€95.50**	**18**
Proposed Lineshare Pricing	€13.96	0.75	€13.21	€48.50	4

Above is an outline of the cost to migrate these customers from bitstream to lineshare together with a return on investment for this migration. This return on investment is only calculated based on the cost of migrating these customers and not for the actually infrastructure and licence cost of unbundling the exchange. At the current price it would take Magnet Networks 18 months to recover their cost for migrating a customer from bitstream to lineshare. With the proposed reduction in the Intra Migration premium this falls to 9 months. If Comreg also implement their Line share price reduction the return will only take 4 months which makes it an imperative for Magnet Networks to migrate their customers.

Q. 7. Do you agree or disagree that an Intra Migration Premium is contrary to the principles set out in paragraph 2.2? Please explain your response in detail.

Magnet Networks strongly agree that the Intra Migration cost is contrary to the objectives set out at paragraph 2.2 of this consultation. The Intra Migration Premium violates the tenet of each objective as follows:-

1. *Promote Competition*
   It is evident that imposing an intra migration premium prevents competition in the generic broadband marketplace. It ensures that OAO's remain purchasing eircom's bitstream product rather than innovating within the LLU sphere. This premium makes investment unattractive and without investment effective competition cannot take place.

2. *Promote interests of the users within the community*
   Users interest have shifted from using the internet as a mere tool to book flights or order books to somewhere they watch videos, stream movies, listen to radio stations e.g. RTE's Operation Transformation allows viewers to log on and follow exercise programmes and cooking demos. Users are now using more bandwidth intensive applications and with eircom's bitstream a users bandwidth is capped at a contended rate of 7.6Mbps or if some are lucky a contended 12Mbps. By having an Intra Migrating Premium eircom are making it unattractive and difficult for OAO's to migrate their customers. This barrier is preventing the user from receiving higher uncontended broadband speeds. These higher speeds will enable customers residential or business to watch these cooking demo's, work from home, virtual call centres etc. Imposing an Intra Migration premium is hindering and fettering the users interests.

3. *Ensure that there is no distortion or restrictive of competition*
   Imposing a premium to move from a poorer quality service to a higher quality service surely is a blatant restriction on competition. Effectively, it is hindering a competitor from providing a better service for the same if not a cheaper price. This premium restricts investment making unbundling economical ineffective. Hindering investment is ensuring that competition is restricted and distorted ensuring that the end user has no choice.

4. *Encouraging efficient investment in infrastructure and promoting competition.*
   How can a 'premium' promote efficient investment and competition? With the bitstream price 52 cent higher than the LLU price there is no incentive to unbundle exchanges. However, once these exchanges are unbundled and the investment is made by the OAO the OAO is again penalised if they want to provide their current bitstream customer within that exchange a better service. Please see the previous return on investment table showing that there is no incentive for an OAO to migrate bitstream customers. Thus, the premium does not encourage competition but actually fetters it and hinders efficient investment.

5. *Encouraging access to the internet at a reasonable cost to the end users.*
   OAO's would love free and fair unfettered competition. This competition would ensure reasonably priced broadband and would saturate the market to ensure that the majority of the population have access to reasonably priced broadband. However, this premium further inhibits an OAO from migrating

customers and makes unbundling unattractive as it is a cost borne by the OAO and invariably passed on to the end user, thus raising broadband prices. Therefore, these broadband prices look unreasonable when compared with the eircom bitstream offering. Eircom can ensure their pricing is at all times structured so that LLU pricing looks unreasonable, to the end user. This premium does not encourage reasonably priced broadband to the end user.

Overall, the Intra Migration premium prevents the effect implementation of the five objectives by fettering competition, penalising the end user and preventing access to higher speeds at a reasonable cost.

Q. 8. If you believe a premium should be charged for Intra Migration (for example from Bitstream to LLU), what premium would you believe is appropriate and when should this premium be paid by OAOs? Please explain your response in detail.

Magnet Networks does not believe that a premium should be paid as Magnet Networks is already penalised when unbundling the exchange. The costs of unbundling the exchange not only include the backhaul costs but also include the licence cost, the cost of having an eircom project manager, which is mandatory, the continuous costs of fault repairs, line rental etc. Thus, no premium should apply because it already exists with the licence fee.

Q. 9. Do you have any further views on the theory of option value that has not been considered by ComReg when setting regulated wholesale prices? Please explain your response in detail.

No, Magnet Networks has no further views.

Q. 10. Do you have any further views on the Intra Migration Premium methodology as set out in Eircom's report published as 08/105a, other than that set out by ComReg in this consultation? Please explain your response in detail.

No, Magnet Networks has no further views.

Q. 11. Do you have any experience of, or know of, any similar charging mechanism using an option value in other European member states? Please explain your response in detail.

Magnet Networks are not aware of any other member states using an option value charging mechanism.

Q. 12. Do you agree or disagree that there are no other costs for consideration in the Intra Migration Premium? Please explain your response in detail.

Magnet Networks disagree. There is an issue with inter migration 'v' intra migration costs. Migrating from one OAO to another costs €66 (Comreg Information Notice

07/25) as opposed to the intra migration charge of €98.50. It is the same process with different costs. Thus, these should be considered especially as it is a more complex process than Intra Migration and yet is cheaper. Thus, any excess in Inter Migration should also be reduced.

Q. 13. Do you agree or disagree with ComReg's proposed pricing for the Intra Migration Premium being set at €0(NIL)? Please explain your response in detail.

Magnet Networks agrees with ComReg's proposed pricing. Magnet Networks feel that eircom has recovered all their costs as they are not taking any risk as the expense of the LLU and unbundling exchanges ensure that eircom recover their projected loss of a bistream customer. Also, LLU ensure that eircom recover their sunk cost thus anything above this is profit, through a line rental fee.

Q. 14. Do respondents believe that the draft text of the proposed decision instrument is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please elaborate on your response

Magnet Networks believes that the draft text is detailed, clear and precise and is in adherence to ComReg's legal requirements.