



Commission for
Communications Regulation

The Evolution of Geographic Telephone Numbering in Ireland

Consultation

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An Coimisiún um Rialáil Cumarsáide
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1 Introduction

1. Telephone numbers are an integral part of both fixed and mobile electronic communications networks and services worldwide. Up until the late 20th century, the vast majority of voice telecommunications consisted of fixed telephony, with each subscriber having a unique telephone number, with geographic relevance identifiable within each subscriber number.
2. More recently, there has been greater growth in mobile telecommunications and telephony, resulting in more demand for mobile, as opposed to fixed, telephone numbers. In principle mobile telephone numbers contain no geographic significance.
3. However, fixed telecommunications still has an important part to play in the modern telecommunications environment. Indeed there are still a significant number of fixed telephony subscribers in Ireland, each needing their own geographic number(s) and, in addition, new technologies and services are placing greater demand on the geographic numbers currently available.
4. Ireland's existing National Numbering plan for fixed and mobile telephony is set out in ComReg Document 11/19¹.
5. ComReg has a statutory function to manage the national numbering resource and, in doing so, to ensure the efficient management and use of numbers from the national numbering scheme. In light of this, ComReg must ensure that there is sufficient supply of fixed and mobile numbers available to meet demand. If the supply of geographic numbers in any area of Ireland does not meet demand, it becomes necessary to increase the supply of geographic numbers. However, number changes² are costly and disruptive and are best avoided, where possible. Therefore, while ComReg introduced number changes in the past in various parts of Ireland, in order to meet such number deficiencies, ComReg seeks to only do so where it is necessary and there is no viable alternative solution.

¹ ComReg Document 11/19 - Irish Telephony Numbering & Dialling Scheme Status Report – published 9 March 2011, available here;
<http://www.comreg.ie/fileupload/publications/ComReg1119.pdf>

² Number change in this context means the release of a new number range (could be lengthening subscriber number digit length), the release of a new sub-set of a number range, introduction of an overlay or other measures such as adding a prefix to existing released numbers.

6. ComReg must now review Geographic Number usage³ and to forecast future demand to evaluate what measures, if any, ComReg could take to avoid or postpone⁴ any number changes.
7. Responses to this consultation will be considered by ComReg and published in due course. ComReg will then use information gathered from this consultation, together with any information gathered from other sources, as input into its future, broader public consultation and review of the National Numbering Conventions.
8. ComReg has engaged expert consultants, Analysys Mason – Antelope Consulting ('the Consultants'), to carry out research in respect of this consultation. The Consultants' report is presented in ComReg Document 13/122⁵.
9. ComReg has structured this consultation document as follows;
 - Section 2 of this document gives background on geographic numbering in Ireland;
 - In Section 3 ComReg sets out its proposals for consideration by interested parties;
 - In Section 4 ComReg sets out its initial views on the need or otherwise for a Regulatory Impact Assessment ('RIA');
 - In Section 5, ComReg presents the next steps to be taken in response to this consultation; and
 - ComReg's statutory functions and duties in respect of numbering are described in Annex: 1.

³ Note; ComReg is separately reviewing mobile number utilisation, as discussed in ComReg Document 13/109

⁴ Communications technology is changing rapidly at present and it isn't possible to predict with certainty that potentially looming number shortages will still remain threatened some years from now.

⁵ ComReg Document 13/122 – "The evolution of geographic numbering in Ireland – Consultants' report" – published 19 December 2013.

2 Background

10. ComReg has a statutory function to manage the national numbering resource and, in doing so, to ensure the efficient management and use of numbers from the national numbering scheme. This function includes ensuring that adequate numbers and numbering ranges are provided for all electronic communications services. ComReg's statutory role in relation to numbering is meeting new challenges as new services and increased service innovation is steadily driving up demand for numbers.
11. If numbers in specific geographic ranges run out then number changes must be made, which is costly and disruptive. In the case of heavily-used geographic and mobile number ranges the cost can run into hundreds of millions of Euro. ComReg therefore aims to avoid number changes.
12. To ensure its geographic numbering policy meets demand for the foreseeable future, ComReg has engaged Analysys Mason – Antelope Consulting ('the Consultants') to examine its policy. The Consultants were tasked to make recommendations on possible new approaches to number management in Ireland, with particular attention on those geographic number ranges which face the greatest threat of exhaustion⁶.
13. The tasks assigned to the Consultants included:
 - evaluating the potential impact of emerging communications technologies and services on numbering, naming and addressing and recommending policy change, if necessary;
 - analysing the impact of 'Over the Top' (OTT) communications, such as VoIP, emerging mobile Apps and 'Internet of Things' on demand for geographic, mobile and IP-based nomadic numbers, determining whether any existing, emerging or anticipated trends are short-term or here to stay;
 - liaising with and determining the views of industry experts, to establish the broadest range of views on the above matters;
 - developing a first-cut estimate of the economic impact of any key findings from the studies, in particular where such findings suggest that impending service developments or innovations could lead to expensive number changes;

⁶ For example, the Numbering Advisory Panel computed in February 2012 that if no measures were taken, the then free capacity in Dublin should provide for another 7 or 17 years, (i.e. depending on whether peak or average demand over the previous years is considered). As a 3-year preparation time (alerting the public etc.) is standard numbering practice, this could, in extremis, mean commencing work on a Dublin number change as early as February 2016 if no measures were taken.

- developing a set of recommendations for ComReg to consider and which it might consult on, where appropriate, in response to the findings of the above studies.
14. The Consultants considered Cork, Dublin, Galway, Limerick and Waterford in their analysis and their report concludes that in some locations the demand for geographic numbers could exceed current supply in the near-term future, though the existing supply of numbers may be sufficient for some time to come if measures to conserve numbers are taken. Nevertheless, new and as yet unknown services that could stimulate additional demand for geographic numbers could emerge at any time. It seems likely that the effects of such additional demands could be particularly pronounced in Dublin, where demand for geographic (01) numbers remains especially high.
15. The Consultants' report (ComReg Document 13/122) is published alongside this consultation paper. Policy issues are considered in detail in this report and ComReg will take it fully into account when conducting its forthcoming review⁷ of the National Numbering Conventions. The report also usefully provides specific advice and recommendations on ComReg's approach to number plan management, and particularly geographic numbers, going forward. ComReg will provide this report to its Numbering Advisory Panel (NAP)⁸ and seek its views on the practical issues of implementation that arise in respect of the measures recommended.
16. In Section 3 of the consultation that follows, ComReg presents pertinent policy matters relating to geographic numbering. Responses to this consultation should inform ComReg of the views of interested parties on the important matter of number management and allocation. This in turn should enable ComReg to present its developed proposals on geographic numbering in its future consultation on the National Numbering Conventions.

⁷ Anticipated to be released by Q1/2014.

⁸ The NAP is a specialist committee that provides guidance to ComReg on key issues concerning numbering policy and number management.

3 Geographic numbering issues

17. The Consultants' report (ComReg Document 13/122) presents research on global trends, national considerations and future and current supply and demand in respect of geographic numbering, which it then takes into account in forming its conclusions. The report also sets out measures by which existing geographic ranges may be better utilised and conserved. The report also provides options for providing additional numbers in the event ComReg should need to increase the supply of geographic numbers.

3.1 Number conservation

18. ComReg has two main options available to it in order to supply enough numbers to meet demand; make better use of existing number ranges, or provide additional numbers.

19. Given that number changes are generally costly and disruptive, it is considered prudent to begin with a preference for making better use of existing number ranges and to only introduced additional numbers where necessary.

20. The Consultants researched the current allocation and usage of geographic numbers and present eight techniques for conserving these numbers. The Consultants' report also addresses geographic numbering in Ireland more generally and affords specific focus to the 01 (Dublin) area as this is where number exhaustion is most likely to occur. The Consultants consideration of the current utilisation, demand and supply of numbers in Cork, Galway, Dublin, Waterford and Limerick is set out in Section 5.1 of its report. Measures such as the eight techniques which they describe may also be applicable in any other geographic area where the supply of numbers is a concern, and not only Dublin. These are:

- (1) setting effective utilisation targets;
- (2) reducing the sizes of blocks in allocations;
- (3) charging for numbers;
- (4) shortening the interval between assignments;
- (5) retrieving unused numbers ;
- (6) pooling numbers;
- (7) maintaining the linkage of numbers to locations (minimum numbering area, 'MNA');
- (8) removing the distortions in demand due to tariffs.

21. Each of the eight techniques available could potentially yield different results, for example retrieving unused numbers could provide 500,000 numbers in the Dublin area, whereas pooling of numbers by communication service providers could provide 400,000 additional numbers in the Dublin area. Figure 7.1 of Document 13/122 presents the techniques in tabular format, outlining the quantity of additional numbers made available under each technique, as well as the relative costs of adopting each technique.
22. The Consultants consider that technique 1 (setting effective utilisation targets for communication service providers), technique 5 (retrieving unused numbers) and technique 6 (pooling of numbers between communication service providers) are likely to be the most effective measures for better utilising the current 01 number stock.
23. The Consultants consider that technique 2 (reducing sizes of blocks in allocations) and technique 4 (shortening interval between assignments, i.e. reducing quarantine period) could supplement techniques 1, 5 and 6 if required.
24. The Consultants then turn their attention to the notion of charging for numbers (Technique 3) and conclude that this should be considered if techniques 1, 2, 4 – 6 do not prove effective. Finally, the Consultants consider that technique 7 (ensuring that numbers for a given area code are use by customers within that area) and technique 8 (eliminating distinctions between national and local geographic tariffs) could be applied if new services are shown to boost demand greatly.
25. ComReg, subject to its consideration of responses to this consultation, agrees with the Consultants' analysis and recommendations. ComReg considers it prudent to properly utilise the currently available numbers in the (01) number range, which it believes could provide sufficient additional (01) numbers for the medium term future. ComReg also considers that conservation measures for geographic numbers should commence as soon as practicable for those geographic areas that are most likely to face number exhaustion based on current demand projections⁹. Areas that appear not to be at risk of number exhaustion may have sufficient numbers to last for as long as is necessary (as demand for telephone numbers is expected to peak and then fall in the longer term, in favour of other means of addressing).
26. ComReg proposes to discuss the adoption of techniques 1, 5 and 6 initially with NAP. Should ComReg consider it necessary, it may consider implementing the other techniques listed. ComReg would welcome the views of interested parties in relation to the following questions:

⁹ The NAP has carried out number audits in recent years which, when updated, will provide the best guide to those areas.

Q.1 What are your views on the practicalities, cost and other relevant consequences of each of the techniques listed above? Please set out the reasons for your answer.

Q.2 Do you agree with ComReg's proposal to implement techniques 1, 5 and 6 in consultation with NAP? Please set out the reasons for your answer.

Q.3 Are there other, alternative, techniques available to ComReg to make more numbers available in the Dublin area within the (01) area code? Please provide detailed information on alternative options ComReg should adopt.

3.2 Options for providing additional geographic numbers

27. The Consultants consider that the geographic area code (01), which is used in Dublin and surrounding areas¹⁰, is under the most demand pressure and therefore required particular evaluation. There are currently 6.811 million numbers available in the (01) numbering range, with over 5.6 million of these numbers already assigned to communication service providers. If current demand for (01) numbers remains the same, or if it increases, then the (01) number range could be exhausted within the next 10 years.

28. A number shortage in the Dublin area could require a number change, which in turn would give rise to significant cost. Section 6 of Document 13/122 sets out and analyses eight options available to ComReg as a means to provide additional geographic numbers in the Dublin area, if required. The eight options are:

- (1) continuing mainly with current practice;
- (2) providing new numbers beginning with 3;
- (3) providing new numbers beginning with 0 or 1;
- (4) prefixing existing numbers;
- (5) having a new range with some existing numbers;
- (6) having a new range with all new numbers;
- (7) using existing numbers with, at most, national tariffs;
- (8) using new numbers with local tariffs.

¹⁰ The 01 code is used in Dublin primarily; however this geographic area code is also used in Kildare, Wicklow and Meath to a lesser degree. In this document, the term 'Dublin' or 'Dublin area' represents the entirety of Dublin in addition to the areas in Meath, Wicklow and Kildare where the 01 number code is used.

29. Each of the eight options allows for different quantities of additional numbers to be made available, e.g. continuing with current practice does not make any additional numbers available whereas releasing the (01) 3xxx xxx range¹¹ would provide 900,000 additional numbers for the Dublin area. Figure 6.1 of Document 13/122 presents the various options in tabular format, outlining the quantity of additional numbers made available under each option, as well as the costs and implications of adopting each option.
30. The Consultants recommend that Option 1 (continuing with the current practice of issuing (01) numbers) should continue for now, to be followed if necessary by Option 2 (releasing the 01 3xxx xxx range) and/or Option 3 (closing the Dublin numbering scheme¹²) with seven digit subscriber numbers. If demand for numbers should prove to be more severe, the Consultants recommend that ComReg adopts Option 2 and/or Option 3 with eight digit subscriber numbers. Finally, the Consultants recommend that if there is a huge future demand for numbers then Option 4 (prefixing all existing Dublin numbers) could be the most appropriate solution. The Consultants do not consider Options 5 – 8 as being the most practical or effective to alleviate any number shortages as may occur.
31. ComReg agrees with the Consultants' analysis and recommendations. The most appropriate option(s) depend greatly on the quantity of numbers ComReg considers necessary to meet demand. ComReg considers it prudent to monitor the (01) area code to begin with and to implement the most appropriate Option to meet the demand for (01) numbers for the medium term future if or as it arises.
32. ComReg considers that mixed number length approaches (e.g. 7-digit and 8-digit numbers running in parallel in Dublin) should only be introduced where absolutely necessary. Therefore, for the immediate future, only those options which involve one number length (i.e. 7-digits in Dublin, 5, 6, or 7 digits in other areas) should be considered. However, Numbering Advisory Panel guidance will also be sought on this view.
33. Accordingly, ComReg proposes to adopt Option 1 initially. If ComReg foresees that demand for (01) numbers is increasing, then it proposes that it would adopt Options 2, 3 and 4 in that order, to satisfy demand.

¹¹ Note, the (01) 3xxx xxx range is currently reserved for expansion by ComReg and is not in use.

¹² Closing the Dublin 01 numbering scheme would in practice result in the removal of local dialling functionality in the Dublin area. At present, a caller can simply dial the subscriber number if making a call from within the 01 area to another 01 number. Closing the numbering scheme would result in all callers in the 01 area having to prefix 01 to all calls from within the Dublin area to another Dublin number. This in effect makes the subscriber numbers starting with 0 and 1 available for release in Dublin.

Q.4 What are your views on the practicalities, cost and other relevant consequences of each of the options listed above? Please set out the reasons for your answer.

Q.5 Do you agree with ComReg's proposal to initially implement Option 1, and then progressively adopt Options 2, 3 and 4 depending on demand? Please set out the reasons for your answer.

Q.6 Are there other, perhaps better, options available to ComReg to supply more numbers in the Dublin area? Please provide detailed information on alternative options ComReg should adopt.

3.3 Policy matters

34. The Consultants present their views on demand for geographic numbers in Section 3 of their report.
35. They consider that the number portability facility provided to subscribers when changing provider alleviates unnecessary number change. They also note that there is an increasing trend for mobile phone subscribers to surrender traditional fixed line telephone subscriptions. The Consultants also maintain the further growth of social media may reduce use of telephone numbers in the very long term.
36. The Consultants note that the demand for new numbers from over the top service providers is quite limited as the vast majority of these services use "freemium" products which do not rely on telephone numbers. However, they note that where over the top VoIP users opt to make use of telephone numbers, there are three options available to the service provider to provide this telephone number:
- (1) Provision of a virtual number: A telephone number without a directly associated telephone line. This can often be geographic number.
 - (2) Customised access number: this is a number that callers dial instead of dialling the long distance or international number which they wish to contact; it lets them make low cost international calls.
 - (3) Universal contact number: a number allowing incoming calls to the number to ring simultaneously or sequentially any of the users's configured devices.

37. The Consultants discuss the number demands from OTT, VoIP and other mobile services in Section 3.5 of their report. They conclude that emerging communications services are likely to result in a low to moderate increase in the demand for new numbers as long as current numbering conventions continue to be applied, in effect preventing the extraterritorial assignment of virtual numbers.

Q.7 Do you agree with the consultant's forecast that there will be a low to moderate increase in the demand for new geographic numbers as long as current numbering conventions continue to be applied? Please provide reasons for your view.

38. The Consultants consider that there would be a rise in demand if customers wanted their own individual and unique geographic number. However, nationally the rise in the number of residential fixed voice subscriptions is accompanied by a fall in household size; so on average assigning two geographic numbers per household would probably be adequate. The Consultants also state that as an average across enterprises, assigning two geographic numbers per employee would probably prove adequate.

Q.8 Do you agree with the Consultant's view that the provision of two geographic numbers per household and per employee is sufficient to meet demand from residential and business consumers? Please provide reasons for your view.

4 Regulatory Impact Assessment (RIA)

39. ComReg has considered the need for a RIA during the development of this consultation document and concluded that one is not necessary or appropriate. ComReg's RIA Guidelines (ComReg Document 07/56a) state that ComReg will conduct a RIA in any process that may result in the imposition of a regulatory obligation, or the amendment of an existing obligation to a significant degree, or which may otherwise significantly impact on any relevant market or any stakeholders or consumers. ComReg will not impose or amend any obligation on foot of this consultation but will use all relevant information gathered through this consultation as an input to its subsequent consultation on the National Numbering Conventions. ComReg will again consider the need for a RIA at that time.

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5 Next steps

40. ComReg has put forward a number of specific proposals in this document for consideration by interested parties and now invites feedback that will help to guide it on steps it should take regarding geographic numbering, specifically in Dublin. The responses will be taken into account in ComReg's Consultation and review on its National Numbering Conventions documents, expected to be published in Q1 2014.

41. The consultation period will run from 19 December 2013 to 24 January 2014.

42. Responses must be submitted in written form (post or email) to the following recipient, clearly marked "Submissions to ComReg 13/121":

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43. All comments are welcome; however it will make the task of analysing responses easier if comments are referenced to the relevant question numbers from this document. In submitting any response, please also set out your reasoning and supporting information for any views expressed.

44. As all responses will be published, those submitted electronically must be unprotected, to facilitate online publication.

45. Finally, it may be necessary for respondents to provide confidential information in their submissions. Confidential information must be clearly identified as such. ComReg will publish all of the responses it receives to this consultation, subject to its guidelines on the treatment of confidential information¹³.

¹³ See Document 05/24 at <http://www.comreg.ie/fileupload/publications/ComReg0524.pdf>

Annex: 1 Relevant statutory provisions

1. Section 10(1)(b) of the Communications Regulation Act, 2002, as amended, (the “2002 Act”) states “*The functions of the Commission shall be...to manage the radio frequency spectrum and the national numbering resource, in accordance with a direction under [section 13](#)”.*
2. Section 12(2)(a) of the 2002 Act states (amongst other things) “*In relation to the objectives referred to in subsection (1)(a), the Commission shall take all reasonable measures which are aimed at achieving those objectives, including... encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources.*”
3. Regulation 13(2) of the Authorisation Regulations 2011 (S.I. No. 335 of 2011) states “*The Regulator [ComReg] shall establish open, objective, transparent, non-discriminatory and proportionate procedures for the grant of rights of use for numbers and shall cause any such procedures to be made publicly available.*”
4. Regulation 20(1) states “*The Regulator shall ensure that all relevant information on rights, conditions, procedures, charges, fees and decisions concerning the general authorisation, rights of use for radio frequencies, rights of use for numbers and rights to install facilities is published and kept up to date in an appropriate manner so as to provide easy access to that information for all interested parties*”.
5. Regulation 20 of the Framework Regulations 2011 (S.I. No. 333 of 2011) sets out other relevant provisions:
 - (1) *The Regulator shall, subject to ensuring the proper management of the national numbering scheme in accordance with its objectives under section 12 of the Act of 2002 and Regulation 16, grant rights of use for all national numbering resources for all publicly available electronic communications services.*
 - (2) *The Regulator shall establish objective, transparent and non-discriminatory procedures for granting rights of use for national numbering resources.*
 - (3) *The Regulator shall ensure that adequate numbers and numbering ranges are provided for all publicly available electronic communications services.*
 - (5) *The Regulator shall, subject to ensuring the proper management of the national numbering scheme, grant rights of use for numbers and number ranges for all publicly available electronic communications services in a*

manner that gives fair and equitable treatment to all undertakings providing publicly available electronic communications services.

(6) The Regulator may, without prejudice to the generality of Regulation 14(1) of the Authorisation Regulations, attach conditions to rights of use for numbers—

(a) to ensure efficient and effective management of all numbering resources, and

(b) to ensure that an undertaking to which the right of use for a range of numbers has been granted does not discriminate against other undertakings as regards the number sequences used to give access to its services.)

(7) The Regulator shall, subject only to limitations which may be specified by the Minister on the grounds of national security, from time to time publish the details of the national numbering scheme and significant subsequent additions or amendments to it.

(8) The Regulator shall, in so far as is practicable, having regard to its objectives under section 12 of the Act of 2002 and Regulation 16 and to its functions under the Specific Regulations, support the harmonisation of specific numbers or numbering ranges within the European Union where it promotes both the functioning of the internal market and the development of pan-European services.