Question 1:Given recent developments, do you agree that Ofcom?s focus should be on the following three objectives in developing our policy for VoIP services, namely (in so far as is possible) (i) enabling innovation in a technological neutral way, (ii) ensuring consumers are well informed, and (iii) ensuring maximum availability of 999 services? : There is a fourth objective to which I believe Ofcom should give equal weight along with the three mentioned, and that is standardisation.

With PSTN services, consumers can buy any phone and know that it will work with their service provider (be it BT, NTL or Telewest). The situation is much the same for mobile phones (as long as consumers don't buy old single-band phones or locked phones). The same degree of interchangeability needs to be true for VoIP services in order to ensure consumers can switch between different service providers without having to buy new equipment. This should be enforced by requiring VoIP service providers to support the open standard VoIP protocols (SIP, etc.) and a minimal core set of audio codecs (G.711 and maybe one or two others).

This may at first sight seem to conflict somewhat with the `technological neutral' part of objective (i), but it doesn't if you consider the latter to apply only to physical technology (such as the type of VoIP hardware used and its method of connection - Ethernet vs. wireless etc.), since the VoIP protocols and codecs are entirely a software matter.

The reason Ofcom can be technology neutral at the hardware level is because hardware manufacturers adhere to the relevant standards for Ethernet, wireless networking, USB, etc. as a matter of course. The same is not generally true for software. Ofcom will be able to be technology neutral at the software level only if all of the VoIP service providers use software that adheres to the established VoIP standards.

Question 2:Do respondents agree with this approach for the interaction between network providers and PATS providers? : Yes.

Question 3:Do you agree that the limitation of GC 3 obligation to providers of service at a ?fixed location? is not sustainable in the long term? What views do you have on how this may be addressed? : No. I see no reason not to retain this limitation.

Question 4:In light of the other measures proposed in this document, are there particular issues in relation to VOIP services that should be addressed in this review ? : No comment.

Question 5:Are there particular issues in relation to VoIP services that should be addressed in this review ?: Yes - regarding harmonisation, see my comment about standardisation in my answer to question 1.

Question 6:Do you have any comments on Ofcom?s proposed modification to the PATS definition in GC 18? : I agree with Ofcom's assessment that Option 2 (modification) is preferable to Option 1 (status quo).

Question 7:Do you agree with the proposed application of the code?: Yes, although the grace period of one month seems a little short.

Question 8:Do you agree with the proposed approach for informing consumers that services may cease to function if the broadband connection fails or there is a power cut or failure ?: Yes.

Question 9:Do you agree with the proposed approach for informing customers where access to emergency calls is not available ?: Yes.

Question 10:Do you agree with the proposed approach for informing consumers that access to emergency calls may cease to function if the Data Network fails or there is a power cut/failure?: Yes.

Question 11:Should the code be extended to point of signature acknowledgement in respect of reliability of access to emergency calls?: No.

Question 12:Do you agree with the proposed approach to location information providers where the service does provide access to emergency calls? In particular, do you believe that subscribers should be required to register their main location prior to activation of the service?: I agree with the approach, and that subscribers should be required to register their main location. However, I disagree with one detail: that subscribers should update their location information whenever accessing the service from a new location. Typical users cannot be relied upon to remember to update this information, especially in an emergency situation, leading to an unacceptable risk of the emergency services receiving incorrect location information. Instead, emergency calls that originate from a VoIP service should be flagged as such to the emergency services so that they know the location needs to be confirmed with the caller.

Question 13:Do you agree with the proposed approach to informing consumers where services do not provide emergency location information?: Yes.

Question 14:Do you agree with the proposed approach to informing customers where services do not provide number portability? : I agree with the approach for the case where a provider does not offer number portability, but I also suggest an addition for the opposite case. Providers who do offer number portability may only be able to offer it for certain numbers (e.g. only certain geographic regions), in which case they should inform customers of which numbers they can handle.

Question 15:Do you agree with the proposed approach to informing consumers about the types of facilities that might not be available, but which they have come to expect from a telephone service ?: Yes.

Question 16:Do you agree with Ofcom?s view that all aspects of the code of practice should be mandatory?: Yes.

Question 17:Do you consider that the overall programme of activities is appropriate?: Yes.

Question 18:In light of Ofcom?s Consumer Policy Review, are there other consumer education measures that Ofcom should consider?: If my suggestion in answer to question 1, that providers should be required to support the open standard VoIP protocols and a core set of audio codecs, is not implemented, then consumers need to be educated about the advantages of choosing a service provider who does support them (i.e. the advantage is the ability to change providers without needing new equipment).

Question 19:Do you have comments on this proposed enforcement approach?: No.

Question 20:Are their other areas of research activity that Ofcom should consider to ensure it understands market developments ?: No comment.

Question 21:In relation to ensuring high availability of 999 access, are their other measures that Ofcom could consider?: All of the example in 8.26 and 8.27 are worth considering, except for the idea of a requirement on service providers to supply equipment that has battery back-up. This one would be of little use, as many consumers will purchase their own equipment.

Question 22:Do you agree with Ofcom?s approach to naked DSL?: I believe Ofcom should require that BT allow (non-LLU) ISPs to offer naked DSL services to their customers. Whether any ISPs do offer such services, and whether any customers take them up, should then be left to market forces.

Question 23:Do you agree a cross industry meeting would be a useful approach to move this issue forward? What other steps could be taken to provide support for 056 numbers?: No comment.

Question 24:How can a VoIP call be traced for detection and prevention of malicious and nuisance calls? How could a suitable call screening service work in a VoIP network?: Dealing with malicious and nuisance calls will require cooperation between VoIP service providers and ISPs. (ISPs already have ways of identifying abusive internet users from their IP address.)

VoIP systems support call diversion, so I would have thought that call screening by a nuisance call bureau could be provided in much the same way as for PSTN systems.

The TPS question seems more related to SPIT than nuisance calls - see my answer to question 25.

Question 25:Do you agree that SPIT could be a potential problem and what techniques can be used to minimise the impact of SPIT on consumers of VoIP services?: SPIT is likely to be a huge problem, for the same reason that unsolicited email is a much bigger problem that unsolicited "real" mail (zero cost for the originator). Some of the same techniques currently used to fight email SPAM will also be applicable to help reduce the number of unsolicited VoIP calls that reach consumers. However, techniques that rely on examining the content of SPAM messages (such as bayesian filtering) will obviously be of no use with SPIT, except perhaps for filtering voicemail. I think a likely future scenario is that most VoIP users

will only accept direct calls from people on their white list, with all other calls going to voicemail and being filtered there. No doubt the SPIT originators will counter this by using audio manipulation techniques to try to defeat the filters' speech recognition systems.

An equivalent of TPS for VoIP services would reduce the number of unsolicited calls that originate in the UK, but may not have much impact on the overall problem because unsolicited calls from other countries will not be affected. With PSTN there are much fewer unsolicited calls from outside the UK than from inside because of the higher cost of international calls. This will not be the case with VoIP.

Question 26:Have there been any instances of a VoIP service being compromised or used to deliver malware or a DoS attack?: An effective way to reduce the impact of viruses is to encourage software diversity. If a large majority all use the same software, viruses spread very quickly between those users. This can be seen with software such as Internet Explorer and Outlook Express whose users are badly affected by viruses and other malware, whereas users of other equivalent software (Firefox, Opera, Thunderbird, etc.) are hardly affected at all. In order for software diversity to be able to work in practice for VoIP the VoIP service providers must be required to support open standard VoIP protocols (SIP etc.) and a core set of audio codecs so that their service will interoperate with a wide range of software (both on PCs and in devices such as SIP phones and ATAs). For more on the subject of standardisation see my answer to question 1.

Question 27:Are there any other considerations that need to be taken into account when a provider does not have a UK entity?: No comment.

Question 28:Is it reasonable to ask VoIP service providers to participate in schemes designed for e-commerce ?: It is important to distinguish between the audio data of the call itself and other data such as usernames and passwords when considering privacy and security.

In my opinion a VoIP call that uses unencrypted audio data is no less secure than a normal PSTN call, so for the audio data this is a non-issue.

By contrast, protection of usernames and passwords is much more important, because if they are obtained and used by criminals there could be large costs involved (e.g. through calls to premium rate numbers).

Question 29:Do you have any other comments on the proposed approach to investigating the application of the GCs applicable to providers of PATS in the context of VoIP?: No comment.

Question 30:Do you have any comments on Ofcom?s views on the meaning of abovementioned terms and legal concepts?: No comment.

Question 31:Are there any other steps that a VoIP service provider could consider in respect of the IP network layer and service application layers to ensure network integrity?: No comment.

Question 32:Are there any other steps that a VoIP service provider could consider in respect of parts of the underlying network that they do not control?: No comment.

Question 33:What additional steps could a VoIP service provider take to support nomadic users with regard to maintaining network integrity?: No comment.

Question 34:Do respondents consider whether other options to ensure continuity in the case of a power outage are appropriate?: No comment.

Question 35:What other steps could be taken to provide reliable location to assist the emergency services in their work ?: I do not believe is it technically possible to provide reliable location information for VoIP calls to the emergency services. The best that can be done is for users to register their main location and for this information to be provided to the emergency services with a flag that indicates it may not be reliable and needs to be confirmed with the caller.

Question 36:What other steps could be taken to provide reliable location to assist the emergency services in their work in the case of nomadic users?: Same answer as for question 35.

Question 37:In addition to participating in the NICC working group on providing location in IP networks and the 112 expert group, what other steps should Ofcom take?: No comment.

Additional Comments: