

Next Generation Networks – Future arrangements for access and interconnection

1: Introduction

Ericsson welcomes the opportunity to contribute to this Ofcom consultation.

We share the Ofcom view that major technology changes, which occur naturally in competitive as well as regulated markets are always likely to disrupt existing models of competition.

We agree that the review of NGNs needs to be linked to the key regulatory principles proposed in the Strategic Telecoms Review. To make this response understandable we do therefore consider it necessary to cover some of the issues raised in the Telecoms Review, particularly as the closing date for this consultation is prior to the closing date for the phase 2 telecom review consultation.

We would welcome any opportunity to explain our comments and hope to be involved in the subsequent development of policy in this area.

1.1 Convergence implications of NGN's

Ofcom has identified that NGNs essentially deliver convergence between the traditional world of public switched telephone networks and the new world of data networks.

The issue here is that data networks have had little or no regulation while telephone networks have been heavily regulated. The type of convergence that NGNs bring increasingly places the telecoms and datacoms worlds in direct competition with each other. The first challenge for regulators is therefore to ensure that they do not distort that competition.

NGNs also offer convergence between fixed and mobile networks. The core of NGNs is the IP Multimedia Subsystem (IMS) that was originally specified by 3GPP for use in 3G mobile networks. ETSI TISPAN is now taking the 3GPP IMS and developing those additional standards necessary to ensure that it can be reused at the core of fixed network NGNs.

To have next generation fixed and mobile networks using the same IMS provides the opportunity to finally achieve the FMC, fixed – mobile convergence that has been talked about for some years. For manufacturers it also means that we will only have to justify the R&D costs for a new core network once rather than twice.

FMC also facilitates increased opportunities for competition. For example there could be the opportunity to develop a highly competitive market in applications supported by the IMS and accessible equally from fixed, nomadic or mobile terminals. However when

Ofcom considers which interfaces to open up it should only do so by referencing standards from approved standards development organisations of which the most relevant here is ETSI. If regulators are concerned about which points in the network will be identified as reference points and have interface standards defined for them then they need to at least be involved in the architectural and requirements gathering aspects of the relevant standards bodies.

1.2 Market Disruption

The focus of this NGN consultation is on regulation needed as a result of BT's traditional significant market power in fixed telecommunication markets.

The phase 2 telecom review consultation asks whether Ofcom should review regulation of retail voice markets in 2005. As a result of the level of market disruption being caused by these new technologies the next Ofcom market review needs to cover more than just retail voice markets. The important question will be the definitions of the markets to be reviewed. We would expect the types of convergence occurring to make it appropriate to review fewer, but far broader, markets.

We welcome the commitment of Ofcom to trying to ensure that in the long term the markets can be encouraged to work well enough to make regulatory withdrawal possible. We believe that the disruptive changes to the market identified here will speed up that process.

1.3 Ongoing Regulatory Needs

In the Ericsson response to phase 1 of the telecoms review we did point out that 'even when competition is fully functional there will be three areas where internationally coordinated regulation will continue to be useful'. They were spectrum, numbering naming and addressing and rights of way. Of those three the assignment of those numbers, names, addresses and other identifiers needed to secure routing between and the interconnection of networks is the most relevant for this consultation.

For the traditional telecom world it is mainly the allocation and use of E.164 telephone numbers that needs to be regulated. For the datacoms world it is mainly the allocation and use of Internet Domain names and IP addresses that needs to be regulated. We do consider the process to be regulation even though not carried out by a traditional national regulator in the later case. For NGN interconnect both need to be regulated to the same standard. In addition a means of translation between the 2 is needed. ENUM is a technique that can be used for that purpose. However the regulation of ENUM is not yet clear and predictable enough to encourage large scale investment in it. Ericsson has contributed to the recent DTI ENUM consultation by playing a major part in developing the Intellect response to it.

2: Specific Questions

2.1 Regulatory Principles

Q1: What are your views on potential for competition based on access at different geographic levels (local/metro/core) and the way this may depend on geography?

We do not believe that a case has been established that access at different geographic levels would improve competition.

Q2: In what areas might regulatory withdrawal be feasible if 21CN enabled the delivery of improved equivalence, including 'equivalence of inputs'?

Yes, we do agree in principle. Please refer to 1.2 above.

Q3: What opportunities are there for generic access products to enable withdrawal of regulation from existing service specific products?

No further comment.

Q4: What approaches should be considered for focusing regulation on enduring economic bottlenecks?

No further comment.

Q5: what principles should Ofcom adopt in order to promote a favourable climate for efficient and timely investment in Next Generation Networks?

Regulators cannot directly promote innovation however they do need to take care to ensure that they do not do anything to impede innovation.

2.2 Access at the local access network level

Q6: Do you think that there may be demand for products offering access at the MSAN in addition to or as an alternative to LLU? Are there relevant issues other than LLU migration processes and enabling backhaul competition?

MSAN products will offer fast broadband service access with consequent demand but with the drawback that the deployed MSAN technology will potentially limit service capability.

Q7: What is the potential impact on LLU operators and competition in broadband access of the widespread availability of broadband dial tone?

Broadband dial tone could initially provide access to a service selection capability to allow the user to select their preferred broadband service provider.

Q8: Is it likely to be sufficient for LLU operators to have 'near-equivalence' compared to broadband dial tone, and if so, how short must provisioning timescales be?

Using automatic methods a timescale of 10 minutes would seem reasonable to connect to an operator with presence.

Q9: What is the shortest provisioning timescale that might reasonably be delivered by a re-engineered manual migration process for LLU? If a re-engineered manual migration process is likely to be inadequate, then what alternative means should be considered to ensure operators can compete on an equal basis with a broadband dial tone (e.g. copper cross-connect, 'soft LLU')?

No further comment.

Q10: If some form of 'soft LLU' was made available, might it be practical to provide alternative providers with an ability to configure line cards independently of each other, based on an 'operator profile'?

A soft LLU could be configured in this manner, perhaps as a service provisioning stop gap to proper LLU cutover, providing equivalence to service providers. However soft LLU could impede innovation and competition in the access network as the technology capability will be set by the incumbent operator.

Q11: To what extent, and over what timescale, might operators realistically build out their own networks to the MDF/MSAN nodes, thereby enabling a competitive market in backhaul services?

No comment.

Q12: Are there parts of the UK where backhaul between MSAN nodes and Metro nodes should be regarded as an enduring economic bottleneck?

Using appropriate technology such as microwave backhaul there should be no need for this to be an enduring bottleneck.

Q13: Might MSAN interconnection enable sustainable competition in backhaul in geographies where LLU is not viable?

Where LLU is not viable then it is unlikely that there would be a valid business case for any alternatives.

Q14: Is it likely to be cost-effective for MSANs to support dynamic routing of IP traffic, and if not, what alternative options should be considered for providing some form of MSAN interconnection?

This is not likely to be cost effective. The use of Ethernet layer 2 with VLAN routing on a service basis is appropriate.

Q15: If MSAN interconnection were appropriate, what level of access (e.g. layer 2 v layer 3 v voice interconnect) is likely to be suitable?

Ethernet layer 2 is the recommended method for MSAN interconnect

Q16: Is it possible to rule out at this stage the option of providing service specific interconnection at every MSAN?

No, if VLAN technology is used

Q17: Given that MPLS technology is only likely to be deployed within core networks, at least for the immediate future, how might services based on some form of MSAN interconnection provide adequate quality of service?

In line with the DSL forum thinking regarding quality of service at layer 2 we recommend the use of Ethernet 802.1q. (Ethernet P bits, layer 2 QOS).

Q18: what are the aspects of equivalence of input that would need to be considered for MSAN interconnection?

No further comment.

Q19: Do you believe that inter metro conveyance is not an enduring economic bottleneck and therefore, where LLU/MSAN access competition is not viable, that regulation should be focused on access at the first metro node?

No further comment.

Q20: Is the ability of operators to build out to metro nodes likely to vary geographically, resulting in the need for conveyance to some nodes to be regulated on an ongoing basis?

No further comment.

Q21: What would the characteristics be of a metro node access product supporting equivalence of input?

No further comment.

2.3 Access to intelligence functionality

There are two opportunities for service competition. Either by creating the opportunity for a new application provider market through open API,s or by defining services with open interfaces.

Ericsson agrees with the reference here to open high level API's. Ericsson is active in SDO's in specifying such API's. Indeed we were encouraged by regulators in the past to do that work so we would have been disappointed if that was no longer the focus.

In an ideal world there would perhaps only be a need for one global API. That won't happen but the objective should be to only access intelligence functionality through a limited number of high level APIs defined in standards that are referenced in the appropriate EC document. The applications market should be highly competitive and innovative so access to it needs to be simple clear and stable.

Q22: Under what circumstances should BT face specific access obligations for intelligence capabilities due to its SMP in a related market and what specific examples are there?

No further comment

Q23: Under what circumstances should access to intelligence capabilities be regulated on a reciprocal basis and what specific examples are there?

No further comment

Q24: To what extent might commercially negotiated access to intelligence capabilities remove the need for regulation?

No further comment

Q25: Is it important to consider the provision of deeper hooks to directly access intelligence capabilities and is this access likely to be practical.

No further comment

Q26: What might be the benefits from achieving equality of access to 21CN OSS, and do these require adoption of 'equivalence of inputs', or is some form of compromise appropriate?

No further comment.

Q27: What might be the practical barriers to achieving 'equivalence of inputs' in relation to 21CN OSS, and do you believe that these are likely to be surmountable?

No further comment.

2.4 Transition to the new world

Q28: What do you believe the appropriate guiding principles should be for the transition from existing access and interconnection arrangements to new arrangements? Do you agree with Ofcom's proposed principles?

Not appropriate for us.

Q29: What types of product migrations are there likely to be for 21CN and what general issues do they raise?

We believe that the place to drive this work in 3GPP, ETSI TISPAN and the other appropriate standards bodies. Ericsson has been particularly active on driving the standardisation of the IMS in 3GPP as we believe this will provide the basis for future product migrations.

Q30: What might be the impact of geographic migration of points of interconnection for alternative network providers?

No further comment.

Q31: Might this be mitigated by, for example continued provision of interconnect at some existing sites?

No further comment.

Q32: where the impact cannot be mitigated, what principles should determine whether BT should pay compensation, and, if so, to what level?

Not appropriate for us.

2.5 Service Specific Issues

Q33: Would it still be relevant for future IP based versions of voice interconnect services to be charged on a pence per minute basis or should other charging schemes (e.g. flat-rate origination and termination included in within the line rental) be considered.

Internet peering agreements are as relevant here as telecom interconnect agreements. It is not wise for a manufacturer to get into the detail of what one customer charges another however we do feel that there should be a component of the charge that is related to the traffic carried. If there is no increase in revenue from an increase in traffic then it is

difficult to see how the business case for increasing network capacity could ever be established.

Q34: Given that 21CN will result in narrowband and broadband access being supported on almost identical platforms, is it sensible to continue to make a distinction between wholesale narrow band access (WLR) and wholesale broadband access (Broadband EUA), or should consideration be given to a single wholesale access transport service supporting narrowband and broadband.

We agree that the distinction based on bandwidth will not be sustainable in the future. We do expect that distinction based on quality of service will become more appropriate.

Q35: Is it likely that take-up of 'Voice over Broadband' will eventually allow the withdrawal of voice-specific regulation, and if so, under what conditions and over what timescale might this occur?

It is hoped that this change in market structure will result in opportunities for the reduction of voice-specific regulation. However there are issues to be resolved such as location information for emergency services. See also our introduction.

Q36: Would it be appropriate to consider refocusing voice specific regulation on those low-spending customer deciles least likely to take 'Voice over Broadband'; service and, if so, how and when might this be done?

This is a social policy issue and as such it is one for politicians to decide. If they do want this then care will need to be taken to ensure that it is financed in a way that doesn't distort competition elsewhere.

Q37: Which legacy regulated services and line features provided by the current PSTN might not be supported by the 21CN PSTN replacement service, what should be the process for producing a definitive list, and what should be the process and timescale for withdrawing services on the list?

We do think that the process for defining what services are a regulatory requirement should be carried out at the EU level.

Q38: What compensation arrangements should be considered when alternative operators are forced by BT to re-arrange their PSTN points of interconnection?

Not appropriate for us to comment.

Q39: Might it be possible to mitigate the impact of the withdrawal of local exchange interconnection, either by providing TDM gateways at more locations, or by establishing a charging structure under which those operators capable of providing backhaul for themselves would not be charged if they were forced by the new interconnection arrangements to use BT backhaul?

Not appropriate for us to comment.

Q40: what issues need to be considered relating to signalling used for PSTN interconnection with 21CN? (for example the SIP specification to be adopted, the availability of SS7 as well as SIP interconnection, the availability of IUP as well as ISUP, the availability to interconnecting operators of H248, support for a UK specific feature set)

Ericsson participates in the NICC believing it to be the appropriate body to take these decisions. We participated in the MOU for the introduction of ISUP and are surprised by the continued use of IUP. It is important to restrict the number of standards that need to be supported and we supported the NICC decision not to publish the BICC specification.

It may not always be possible to achieve decisions within the NICC and so Ofcom will need to remain competent to arbitrate where difference cannot be resolved within the industry.

Q41: What transmission interfaces need to be considered for TDM gateways used for PSTN interconnection?

Standard SDH interfaces, e.g. STM1.

Q42: For call types that traverse multiple TDM gateways what is the likely impact on end-to-end QoS, and what options should be considered for mitigating this impact (a new approach to number portability for example)?

QoS problems are to be expected even when a number has not been ported. The problem is being considered within the NICC which is appropriate.

Q43: What other technical issues need to be considered in relation to PSTN interconnection with 21CN?

We do not wish to comment further here.

Q44: Would broadband access and interconnection need to evolve to allow derived voice services to be provided in an efficient manner over an entry-level broadband connection and still provide similar quality of service to PSTN voice?

No comment.

Q45: What other issues need to be considered in relation to derived voice services?

An example is whether line powering will be required.

Q46: What range of regulated business ISDN services is there a need for 21CN to support?

No comment.

Q47: What scope is there for withdrawal of some legacy regulated ISDN services?

No comment.

Q48: Do next generation Voice VPNs raise any service-specific requirements in relation to 21CN?

No comment.

Q49: What options should be considered for managing the migration of current generation voice VPNs to next generation voice VPNs and IP VPNs?

No comment.

Q50: What other issues need to be considered in relation to next generation business voice services?

No comment

Q51: Once broadband is available to most UK consumers would it be appropriate to agree a process and timetable for the withdrawal of FRIACO?

No comment.

Q52: If FRIACO is withdrawn, over what timescale should this take place in order to allow an orderly migration, and what process issues need to be considered?

No comment.

Q53: Is there likely to be a long-term need for some sort of flat-rate dial-up internet access service, in order to cater for those consumers unable to receive broadband services?

No comment.

Q54: What form of entry-level internet access service would be appropriate for those consumers who only occasionally access the internet, and who therefore do not have a strong incentive to migrate to broadband?

No comment.

Q55: What other issues need to be considered in relation to consumer narrowband data services?

No comment.

Q56: Is it likely that consumer broadband services will in future require some form of managed QoS, or some other specialised capability, due to the introduction of new multimedia services such as real time video?

Yes.

Q57: If so, might this be best delivered through changes to the underlying generic access and interconnection services or would there be a need for new forms of access and interconnection specifically designed to support such requirements as real-time video?

Studies and standardisation are ongoing. Multiple solutions are available now, e.g. using Ethernet technology with Multicast and multiple QoS classes.

Q58: Is it reasonable to consider replacing the two existing forms of broadband interconnection (IPStream and DataStream) with a single converged IP interconnection service, incorporating the option of MPLS-based QoS management, in addition to a basic 'best-efforts' service?

No comment.

Q59: Is some form of layer 2 (e.g. ATM or Ethernet) broadband interconnection continues to be required, as well as IP interconnection, how is this likely to be affected by the migration from ATM to Gigabit Ethernet?

We expect Ethernet broadband interconnect to be required.

Q60: What other issues need to be considered in relation to consumer broadband data services?

No comment.

Q61: Which legacy leased line services are likely to continue to be provided directly over optical transmission network, and which might be provided using circuit emulation technology over NGNs?

No comment.

Q62: What technical and commercial issues might be raised if BT were to use circuit emulation technology to provide leased line services over 21CN?

Circuit emulation introduces additional end to end delay compared to today's transmission technology.

Q63: Which legacy leased line services are likely to be no longer needed over 21CN?

No comment.

Q64: Would it be appropriate for next generation leased line service provided over 21CN to focus on new transmission technologies such as Gigabit Ethernet.

We think this would be appropriate as Ethernet technology is cost effective.

Q65: What would be the desirable characteristics of an Ethernet based wholesale leased line, and which variants of the Ethernet technical standards should be considered (100Mbps Fast Ethernet, Gigabit, 10 Gigabit, Long Reach Ethernet, Resilient Packet Ring, etc)?

The market should have the opportunity to decide from among openly standardised variants.

Q66: Are there certain types of business services that will continue to need PDH/SDH-based transmission, or will PDH and SDH increasingly become legacy services?

We do see the need for continued support of PDH and SDH for delay sensitive services.

Q67: Might selective access to dark fibre, in those geographies where there is no alternative supply, be a more targeted means of addressing the underlying access bottleneck than a general requirement to provide wholesale leased lines?

No comment.

Q68: Might access to dark fibre be more likely to result in significant service innovation, because of the ability to deploy new transmission technologies (e.g. new variants of Ethernet)?

No comment.

Q69: Might some form of QoS-enabled bitstream interconnection, similar to the current DataStream service, be an effective means of enabling competition in the market for business data services?

Yes.

Q70: If so, would ATM or IPIMPLS be appropriate, and what technical issues would need to be resolved in order for the service to be effective?

Neither ATM nor IPMPLS would be as cost effective as Ethernet.

Q71: If Ofcom was to focus regulation on just one of the three different means of addressing the access bottleneck associated with business market (dark fibre, leased lines, QoS-enabled bitstream), which would you choose?

We would choose QoS-enabled bitstream.

Q72: What other issues need to be considered in relation to business data services?

No comment.