QSC AG Response

ERG Consultation Document on Regulatory Principles of IP-IC/NGN Core

Preliminary remarks

QSC AG ("QSC") appreciates the Publication of this Consultation document and the opportunity to comment on the various topics raised with the implementation of NGN interconnection. Whereas QSC has already participated in the lively national debate on these topics, we think it of significant importance to generate a common European regulatory strategy for dealing with NGN networks and interconnection.

Nevertheless there is a second important topic more than remotely connected with arrival of NGN networks. Whereas the solid group of incumbent operators and some NRAs think, that carrier (pre-) selection is no longer necessary in an NGN environment respectively in markets evolving towards NGNs, market reality will show the need for this instrument to guarantee competitive market power in the national and international calls markets, which are in the process of being deregulated thanks to this regulatory obligation. An omission of this obligation for NGNs will reduce the competitive market share in the calls markets back to the level found in the access markets (especially with incumbent operators "technically" moving their entire PSTN subscriber base into an "NGN"). There is – to our opinion – no other technically simple instrument to achieve the necessary ease of use and choice. Retail customers cannot be forced to have their computers running – if they have any – to be able to use an other IP-based calls supplier, which, on the other hand, would also heavily tax national numbering resources as each and every of these additional calls suppliers would have to attribute an other national E.164 numbers towards their – one-time? – customers. To prevent anticompetitive actions of incumbent operators (i.e. "technically" moving all their subscribers into an NGN to circumvent carrier selection obligations) designed to re-establish SMP in the calls markets, the ERG has to include the topic of "Call Origination Services" into the regulatory portfolio for NGN Interconnection.

Consultation questions

1) *A.4.1 Separation of transport and service*

Considering that according to the ITU definition of NGNs where service-related functions are independent from underlying transport-related technologies, how do you evaluate the concepts of transport interconnection and service interconnection as defined in the document?

QSC supports the general notion of the consultation document to keep service and transport interconnection open separately, especially concerning new – and up to now non-recognizable – services. The future is unclear here, so the door shall not be shut entirely.

For voice it's a different matter at the moment: QSC will interconnect for privacy/security reasons only through SBCs(session border controllers). So the operator/end user equipment/SIP server asking for termination services will not get the IP address of the End user, but the IP address of the SBC. In this case the concepts of service and transport interconnection merge to a certain degree.

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2) A.6 Structure of the document

Do you see other issues regarding regulatory principles of IP-interconnection/NGN core that should be dealt with?

Additional aspects are quite hard to find, as the ERG has compiled a quite concise document. Nevertheless more thoughts should be expended on the impact of market definitions on real market conditions, for instance on the feasibility to implement B&K with the current market definition regime. Also there is a necessity to expand the document with issues concerning carrier selection. The reasons for this have been laid down in the preliminary remarks.

3) B.3.3.1 Number of network nodes and points of interconnection (PoI))

Can you make more precise statements on the number of network nodes and/or points of interconnection in NGNs?

This is a difficult question as the answer is depending on the optimum number of softswitches/SBCs for the incumbent network. This number is always a function of traffic volume, therefore it will be influenced mainly by the following factors:

- if only true NGN access subscribers are (inter)connected with this network, market share of the incumbent operator for NGN-based subscriber access.

- if all traffic for the incumbent network operator has to go through the NGN IC (by way of network internal gateways to its interior PSTN structure), traffic volume is much higher (= higher efficient number)

- if carrier selection and pre-selection is continued – as it should to keep national voice markets competitive – traffic volume will significantly increase = more POI.

- network design elements concerning network security and reliability.

4) *B.3.3.2 Definition of local interconnection*

a) Is there an equivalent in NGNs to the concept of local interconnection as known from PSTNs?

Not in a narrow sense of the word. Staying with the concept of SBC-based NGN interconnection (for security and privacy concerns), there is no hierarchy in those SBCs. So the maximum number of SBCs (see B 3.3.31) would define “local interconnection”, as the SBC is the “lowest” network element accessible through interconnection.

An equivalent to local interconnection might not be feasible, because local interconnection depends on a predictable relationship between an identifier (E.164 number or IP address) and a physical location (i.e. access line) and the existence of a switching unit. Within the PSTN in the absence of national number portability, this relationship was given and enabled “local interconnection”. With NGN networks (and a degree of nomadic use put in for good measure) and their lower optimum number of SBCs/softswitches, additional POI do not seem economical as there is no additional value in geography-induced transport services.

Also – concerning transport interconnection – there is no geographical information with the IP address – either of the SBC or the end-user.

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b) *What do you consider to be the locations for the lowest level of interconnection (physical and/or service), e.g. the broadband remote access servers (BRAS)?*

For transport IC the BRAS might be a sensible location.

As for QSC transport IC is not a desired feature in NGN voice (due to security and privacy reasons), SBC-based interconnection is determining the location (location of the SBC).

c) Could the maximum number of PoI offered be considered equivalent to local interconnection?

No, it will be less (see above).

5) C.1 Existing and proposed Framework

How do you assess the proposed Framework in the light of the migration process towards NGNs, their technical characteristics and economic implications? Are the proposals suite to address the specific challenges that these present?

In general the proposed Framework will allow a lot of issues to be tackled.

ERG has criticised that the Commission may want to centralize quality / technical parameters. It is the opinion of QSC, that there is a certain necessity to do this in a common market. IP/NGN equipment is procured on a global market, so Europe needs at least a common approach towards standards that have implications for the technology used. If different NRAs set different quality/technological requirements, demand will be fractioned (e.g. equipment more expensive due to R&D) reducing competitiveness for European businesses.

On the other hand the proposed framework misses two important points:

- Requirement for Carrier selection: In a “Full-NGN” environment as well as in its intermediate stages carrier selection is a regulatory requirement of utmost importance. It keeps competition alive in the national calls markets (recently struck from the market list). Otherwise the national calls markets would become anticompetitive, as consumers are back to only one bundled choice for their communication needs, whereas now they can choose and pick, when demand establishes itself. Technically there is no problem to incorporate carrier selection within NGNs. It should be economically feasible in the long run for calls to mobiles (in the event of no B&K) or international destinations, but also induces pricing pressure on national flatrates offered by other operators.

- Stronger information requirements (NGN technology/interoperability) for SMP operators, especially for long-term outlook (specific binding cutback on local PSTN interconnection sites for 3 years in the future; sites of NGN interconnection)

6) C.3.1 Interoperability issues

What type of interoperability requirement do you consider necessary?

Furthermost vendor interoperability is necessary to allow seamless NGN interconnection with SMP operators. SMP operators must not be allowed to use vendor specific technical solutions to

- prevent NGN interconnection

- degrade quality of inter-network traffic (only use of minimum codec)

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- raise rivals cost through R&D effort to be able to interconnect with SMP/incumbent network

7) C.3.2 Impact of charging mechanism on transport bottlenecks

How do you assess different wholesale charging mechanisms in the light of the transport-related bottlenecks?

As QSC is – for security and quality reasons - dedicated towards a SBC interconnect structure, it is difficult to assess a pure transport interconnection.

The main problem with transport interconnection, if done Peering/Transit style might be the reversal of the termination monopoly, as now the bigger operator may be able to charge both for its termination and for the termination service it demands. Tier 1provider refusing to peer and offering "paid transit" instead may serve as the appropriate model. If an operator is no Tier1 provider, it pays regardless of the direction of the traffic. Such a model would serve to enhance voice and access market power positions (SMP) as both directions of the traffic (termination into SMP network and termination to its own customers) have to be paid for by the other – smaller – operator.

Simplest model for a charging mechanism along the lines of Peering/Transit might be an SBC interconnect with dedicated line in-between – and cost sharing of this line either by traffic balance or equal distribution. If SBCs are connected through "the internet" or public peering points, QoS might be achieved only partially.

B&K might be best suited as a wholesale charging mechanism, but the problem of cost distribution for the connecting line between those two networks stays.

8) C.3 Bottlenecks and SMP positions

Do you see other areas (potential bottlenecks) for regulatory intervention?

Concerning service-related bottlenecks, the list on pages72/73 is quite concise. Location information might in the future become an important information, once the completion of the call itself stops to being the sole valuable product. If B&K is employed, not much SMP can be derived from the knowledge, what transport address (IP address) is connected to what identifier (E. 164).

9) C.4.2 Measures based on USO directive

a) Do you consider sufficient to potentially regulate minimum quality (Art. 22 USD new para 3)?

Minimum quality should only be the first step. Especially if the SMP operator ensures higher quality within own networks through better codecs and other features not accessible or available to its partners, regulators must ensure non-discrimination for instance through requirement that such codecs must be supported also through interconnect (if usable by both parties' consumer equipment).

b) Does this require additional regulation at the wholesale level?

Additional regulation at the wholesale level must be available for these quality issues, for instance "minimum set of codecs".

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c) What is your opinion on ERG's consideration that the power to set minimum quality of service requirements (both, on end-user and network level) should be entrusted directly to NRAs?

As already mentioned above, QSC is a bit doubtful about this consideration, as minimum quality is significantly driven by technology. Different interpretations in different member states might have detrimental effects on

- pan-european operators that have to acquire and operate different technical variations within their equipment – driving up costs.
- variations in quality/technology drive up equipment cost with global vendors, reducing competitiveness of European operators and the businesses they serve.
- Decision making by operators will result in less speedy introduction of NGN IC due to possible strategic behaviour of some operators.

10) C.5 Costing and Pricing

a) *Do you agree with the description of the relevant change regarding the cost level, the cost drivers and the cost structure?*

In general, this has been a correct description. The conclusion about the cost level based on LRIC should nevertheless be dutifully analyzed first, as PSTN networks have – up to now – carried the cost burden of the physical national networks (public works, ducts, copper and fibre cables etc.) whereas IP networks have been regarded as an add-on. Now, with the picture reversed and IP networks burdened with the full cost (minus some joint deployment with PSTN – if applicable) of national networks (civil works etc.), the discussion should not come to rash conclusions.

b) For a pricing regime under CPNP, which of the wholesale pricing regimes (EBC or CBC) do you consider more appropriate for IP interconnection?

From a technical point of view, CBC seems to be the candidate as it captures the relevant cost drivers in an IP network more realistically. Nevertheless, as ERG points out, CBC favours size by generating a lower average cost per minute for increasing traffic (through better statistical usage of a prepaid capacity).

Cost advantages of larger operators derive from:

- decrease of average cost per capacity unit (E-1, E-3 or STM-1 vs.STM-4)
- statistically more stable demand, therefore relatively less reserve capacity needed.

This will enhance concentration in the market and ultimately reduce competition towards oligopolistic structures – which already show their damaging effect on consumer welfare and innovation in the US.

Therefore – seen from a competition point of view - EBC might be the better solution.

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11) C.6 Charging mechanisms

a) *How do you assess the arguments with regard to the properties of the charging mechanisms CPNP and Bill & Keep raised in the sections C.6.2 – C.6.10?*

In general, QSC supports the analysis given by ERG. Nevertheless we would like to stress one additional important issue:

B&K is – in contrast to CPNP – able to alleviate a more stable competitive outcome through its "anti-Club Effect" properties. The club effect favours operators with a larger customer base, especially in retail market scenarios with flat rate offers.

Larger operators experience less costs per flatrate offer than smaller operators due to a significant difference between average cost (basis for IC charges) and incremental costs (additional internal call). For larger operators, a larger proportion of calls will terminate within its own network (or within the networks of other companies within the same corporate entity). For those calls, the company resp. the corporation only entails marginal/incremental cost. So larger companies either can expect higher margins from identically priced flatrates or may compete aggressively on price, reducing the market presence of smaller companies.

NGN interconnection will aggravate this problem already recognized within today's PSTN framework, as the difference between average and incremental cost is significantly higher than within the PSTN (see ERG`s own results). So therefore with NGN interconnection and a retail market driven by flatrate offers (for national fixed and network internal telephony) competition problems deriving from the club effect will get worse.

b) How can the migration process towards all-IP infrastructures be alleviated for the following options: 1) long term goal CPNP, 2) long term goal Bill & Keep? How do you evaluate the measures and options discussed here? Please also consider problems of practical implementation.

Nothing to add to these particular migration processes except one crucial point with B&K: In general setting termination rates close to incremental cost (or zero) looks like a good idea in theory. But as long as not both fixed and mobile termination rates are the same in absolute numbers, this process carries the grave risk of aggravating the precarious situation of competitors solely based on fixed networks and not being corporate members of the mobile oligopoly. IF NRAs concur with the process described in the document, the relative "worth" of a termination will increasingly favour mobile operators, therefore expanding todays imbalance and further undermining the competitiveness of fixed operators in a converging environment. Therefore the first step must be symmetrical termination rates for and between fixed and mobile operators– bringing the thoughts of the Commission in its draft recommendation to the only logical and competition-friendly conclusion.

If this is achieved, further process towards B&K may be continued with less distortion of the competitive outcome.

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c) Assuming that different charging mechanisms would apply in different Member States: would this imply specific problems (e.g. arbitrage)? If so, how could they be addressed?

Arbitrage problems may in theory exist, but if we think about the low incremental costs of "NGN minutes", these problems may not constitute such a big problem. If there were such a problem, US mobile operators – in contrast to US fixed operators - would have had massive problems with international arbitrage already.

Practical applications will certainly be call-back services from countries outside the B&K zone, endangering revenues from international calls. By the way, the practical implication of the Commission thoughts its draft recommendation on termination (termination charges based an incremental, not on average cost) will have the same effect. If NRAs want to differentiate now between National/European and international traffic (based on the E.164 number of the originator), the old termination problem might come back, but will – at the border - be limited by the bargaining power of the international counterparty. As many national operators will compete for international traffic, CPNP-based rates may come down, too. But the termination monopoly problem may persist in national transit cases, as the final terminating network for the internationally originated call may want – legally – a fee from the national transit network.

The market response – if there is no legal interference – will be that national network charging termination rates too high for international traffic may not be accessible from without the European B&K zone.

d) Do you consider that the issues mentioned here are comprehensive with regard to the application of Bill & Keep for IP-interconnection?

QSC is of the opinion that the issues mentioned are comprehensive and need no enlargement at this stage.

About QSC:

Cologne-based QSC AG (QSC) is a nationwide German telecommunications provider with its own broadband network, offering businesses of all sizes and premium residential customers a comprehensive portfolio of high-quality broadband communication options. QSC implements complete enterprise networks (VPNs), including managed services, operates voice and data services on the basis of its Next Generation Network (NGN) and provides leased lines in a wide variety of bandwidths - ranging all the way to 400 Mbit/s via microwave technology. In the Wholesale line of business, this network operator additionally supplies national and international carriers, ISPs as well as strong marketing partners in the residential customer market with unbundled DSL upstream products. QSC operates on a nearly nationwide scale, connects over 200 German cities with populations of more than 40,000 with its LLU-based access network and currently employs a workforce of 770 people.

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