Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
IP-Enabled Services	)	WC Docket No. 04-36
	)	
	)	

To: The Commission

REPLY COMMENTS OF DONALD CLARK JACKSON

By: Donald Clark Jackson
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July 14, 2004

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I, Donald Clark Jackson, hereby submit my reply comments[1] in response to the Commission's March 10, 2004 *Notice of Proposed Rulemaking* in the above-captioned proceeding.[2]

After reading and reviewing the vast majority of the comments filed for the NPRM, I assert that my original comments are unique and distinguished in that:

- I proposed how and why communications services/applications should be regulated.
- I proposed a basis for deciding if a communications service/application should be regulated.
- I proposed which IP-enabled services beyond telephony should be considered for regulation.
- I proposed that, wherever possible, communications applications should not require that an end user subscribe to a carrier or service provider in order to use the application, and I proposed specific recommendations for how the Commission should revise its interconnection requirements for existing telephony carriers in order to enable end users who so choose to directly participate in the PSTN.
- Based on these principles, I then addressed how the Commission should deal with most of the issues it raised in the NPRM.

[1] My comments are my own, and do not reflect the views of my employer, or anyone else.

[2] *IP-Enabled Services*, Notice of Proposed Rulemaking, WC Docket No. 04-36, FCC 04-28 (March 10, 2004) ["*NPRM*"].

In these reply comments, I will briefly review my proposed communications regulatory framework in light of other comments and references made by other commentors, and then proceed to reply to comments made by, or issues raised by, other respondents to the NPRM.

I. Proposed Framework/Philosophy of Communications Regulation:

I proposed that the goals of communications regulation are to promote essential communications applications and services by:

a. Facilitating a competitive market for applications and services wherever possible, or to control monopoly powers where and when they exist, and that maximum competition can be ensured by demanding that interconnection requirements and protocols enable direct end-user participation in communications networks.

b. Ensuring specific public policy goals and mandates that a competitive market could not or would not otherwise provide; namely universal service, disability access, requests for emergency assistance, and support for intercept of communications by law enforcement.

At least one NPRM comment referenced Commissioner Abernathy's speech on her "Nascent Services Doctrine"[3], of which I had been previously unaware. There are many significant points of agreement between Commissioner Abernathy's regulatory philosophy and my own, principally that new communications services and applications and technologies should begin in a state of non-regulation, until such time that these applications become essential, at which time they become subject to specific public policy goals and requirements. A significant difference in approach between Commissioner Abernathy's doctrine and my own is her emphasis on

[3] Kathleen Q. Abernathy. The Nascent Services Doctrine. Remarks of FCC Commissioner Kathleen Q. Abernathy Before the Federal Communications Bar Association New York Chapter (NY, July 11, 2002), available at http://216.239.57.104/search?q=cache:i8e3AwazNigJ:www.fcc.gov/Speeches/Abernathy/2002/spkqa217.pdf+Nascent+Technologies+Doctrine&hl=en&ie=UTF-8.

facilities-based competition, versus my contention that many (if not all) communications applications and services can and should be provided over one common transport network, namely high speed broadband IP. There is no need to build special, application-specific, transport networks. I contend that most all of the communications applications and services that are delivered to homes today, be it telephony via a twisted pair of copper, or video via coax or DBS, could all be provided by competing application providers over a common high speed broadband IP network, and it is in the national interest to transition from multiple competing application-specific transport networks to one common very high speed IP transport network. As I outlined in my initial comments (and described further in section II below), there is an inherent conflict of interest when the provider of this common IP transport capability also seeks to provide applications over the same network, in conflict with other application providers. This conflict must either be managed by strict regulation of the provider of broadband IP transport, or, ideally, by structurally separating the owner/operator of the IP transport from those who provide the applications. If private enterprises do not find it attractive to invest in and operate very high speed "clear channel" broadband IP transport networks, then the end users themselves should invest in these networks via a local IP transport utility.[4] [5]

I applaud the Commission for its continuing commitment to lightly regulating new services and applications, and to reduce existing regulations when new services and applications change the need for regulation of incumbent providers. I urge the Commission to augment its regulatory goals by working to ensure that every residence and business the have the ability to connect to a very high speed broadband IP transport, over which users would access or subscribe to any number of communications applications and services, from a wide variety of competitive

[4] The Paradox of the Best Network, http://netparadox.com

[5] Creating the New Public Network, http://www.ipipu.org/npn.htm

applications/service providers, and that the Commission mandate that wherever possible, communications applications and services support interconnection directly by end users.

II. Need for Regulation of Broadband IP Transport Providers:

At present, broadband IP transport is provided by (at best) a duopoly of application providers (telephony and cable). In my comments, I detailed the current and future dangers to applications competition by facilities based broadband transport providers who also provide applications over their broadband networks. One respondent to the NPRM included reference to a news conference by the president and CEO of the National Cable & Telecommunications Association (NCTA) where it was stated it was not the policy of cable industry to discriminate against user traffic.[6] This important principle is too important to leave to the whim of competitors; the Commission should absolutely mandate the requirement of non-interference by broadband IP transport providers. And I reiterate my concern that broadband transport IP providers have sometimes chosen to block certain classes of customer traffic and forced their subscribers to pay extra fees in order to remove these filters, in order to use these applications (specifically virtual private network VPN tunnels). This kind of behavior should be strictly prohibited by regulation. In addition, "non-interference" at the transport layer may not be a high enough standard to promote fair competition between VoIP-based telephony providers. Existing broadband IP links to the home have relatively low speed uplink transmission rates (from the user to the network), often as low as 128kbps, and although downlink speeds can be much higher in principle, in practice, these downlinks are often shared by many users, and there is no guarantee of any kind of specific speed to any one user. Uncompressed, telephone toll quality speech transported via IP takes about 85kbps of bandwidth in each direction. Without access to traffic prioritization or

[6] "NCTA: Cable won't get in Vonage's way", available at http://telephonyonline.com/ar/telecom_ncta_cable_wont/index.htm

quality of service (QoS) features of these relatively low speed IP transport links it is very common for broadband links carrying real time voice/telephony to become overwhelmed, with poor speech quality being the typical result.

The Commission should ensure by regulation third party application provider access to the traffic prioritization and QoS features of broadband IP access links, and that IP transport providers provide "clear channel" or unrestricted or unfiltered IP service to its customers.

III. IP Communications: Interstate or Intrastate?

Numerous commentors describe why all VoIP traffic must be considered Interstate in nature, and thus subject exclusively to Federal regulation by the Commission, and not Intrastate, which could be regulated by the States. As the Commission itself stated in is ruling on the pulver.com FWD petition:

> Unless an information service can be characterized as "purely intrastate," or it is practically and economically possible to separate interstate and intrastate components of a jurisdictionally mixed information service without negating federal objectives for the interstate component, exclusive Commission jurisdiction has prevailed.

I agree with this reasoning by the Commission, and by many other commentors, and I urge the Commission to find that IP communications are Interstate, and subject solely to Federal/Commission regulation.

IV. IP Communications: National or International?

Many of the arguments made in support of considering VoIP traffic to be Interstate in nature can also be made to support the position that all IP communications are in fact International. Clearly the Commission has jurisdiction for US national communications, but is has less jurisdiction over International communications and internationally based carriers. IP and VoIP enable location independence, for the caller, callee, and even the carrier. With facilities-based legacy

TDM telephony, it was not feasible for carriers to be located geographically distant from their subscribers, but with IP transport, a carrier's subscribers can be anywhere in the world, as long as they have an Internet connection. The Commission should strive to create a regulatory environment for providers of telephony applications and services that are consistent and independent of national boundaries. Nortel's comments included this important insight:

> In the current regulatory environment, it can be cheaper and easier for a VoIP reseller outside the U.S. to offer services to US citizens than it may be for domestic providers to offer the same services. The experience with the on-line gaming industry is instructive for VoIP: many on-line gambling companies moved offshore to avoid regulation and taxes. In considering an appropriate regulatory framework for VoIP, regulators must ensure that onerous regulations don't cause the same result with VoIP providers with U.S. jobs unnecessarily being forced overseas. The FCC should adopt a policy that ensures regulatory treatment for domestic VoIP providers that encourages the delivery of VoIP from the U.S. rather than from foreign countries with potentially more favorable regulatory climates. Most importantly, regulators must ensure that VoIP providers that rely on the PSTN pay their fair share to support it – regardless of where they are located.

A crucial regulatory "lever" the FCC wields over providers (wherever they may be located) of telephony to US citizens is access to North American Numbering Plan (NANP) numbers. Given that virtually all US telephony users have today, and will continue to want/demand, NANP phone numbers, the Commission is in a strong position to dictate the rights and responsibilities of users and carriers with NANP phone numbers. I urge the Commission to re-structure and focus many of its regulations of the application we call telephony to be based on access to NANP telephone numbers. Specifically, I propose that any end user or service provider could obtain NANP telephone numbers, if they agree to the following:

- Allow interconnection with any and all parties via the Internet using the IETF SIP protocol.
- Agree to support number portability of NANP numbers
- Agree to terminate (complete) calls provided by others (via Internet/SIP interconnection per above) to all NANP numbers one controls
- Agree to publish the SIP URI (address) of the interconnection gateway that each controlled NANP phone number in a centralized ENUM/DNS registry. The root of the NANP portion of the ENUM/DNS registry would be run by NANPA, and NANP phone

number holders could either host their own ENUM servers via DNS delegation, or contract with NANPA to host their ENUM records.

- Agree to route phone calls placed to NANP numbers to the designated interconnection point(s) listed in the centralized ENUM registry.
- Agree to route 911 phone calls to VoIP-based PSAP interconnection points
- Agree to respect Do Not Call lists, and potential future limits on unsolicited telephone calls.
- Pay an (annual?) fee for the NANP phone number, including universal service for telephony contributions

All current holders of NANP phone numbers would also be bound by these rules, in order to continue to maintain access to these numbers.

V. VoIP: Telephony or Technology?

Just as I did, many commentors distinguish between VoIP services that connect to the PSTN, versus those that do not, and most commentors and I agree that those services that do not connect to the PSTN should not be subject to regulation at this time.

VI. VoIP: Information Service or Telecommunications Service?

Many commentors argue that VoIP-based telephony is an information service, because there is a net protocol conversion between the VoIP subscriber and the PSTN. Although I sympathize and agree with their conclusion, that VoIP-based telephony should not be subject to access charges or reciprocal compensation, I find the "net protocol conversion" justification unconvincing. Take for example a call between a residential "POTS" subscriber and a typical mobile phone subscriber. The protocols used between the residential subscriber's telephone and the LEC Class 5 switch is typically analog loop start, with in-band DTMF for signaling, and speech transport is via analog waveform. At the LEC Class 5 switch the signaling is converted to ISUP/SS7 and then transported over 56kbps links, and the speech is converted to digital PCM, and transported over Inter-Machine Trunks (IMTs). At the terminating mobile carrier's MSC, the signaling is again converted to GSM or CDMA signaling, and the speech is converted to a compressed

format. For this example call, there are three protocol conversions along the signaling path, and at least two protocol conversions along the speech path. If one were to narrow this example to focus only on the connection of the original POTS subscriber to the PSTN, I assert that the native protocols of the PSTN are ISUP/SS7 for signaling, and digital PCM for speech, and there is clearly a net protocol conversion for both signaling and speech between the subscriber premise (loop start analog) and the PSTN. So, the argument that VoIP-based telephone calls are an information service rather than a telecommunications service because a net protocol translation occurs is not a technically accurate or credible rationale for treating a VoIP-transported telephone call differently than a normal POTS telephone call.

As I stated in my initial comments, I propose that access charges and reciprocal compensation be eliminated for all participants in the PSTN, all participants in the PSTN should operate on a "bill and keep" basis, and interconnect with all comers over the Internet. All the lengthy, laborious, tortured arguments made by commentors about why VoIP-based telephony should be considered an information service, so that it will be exempt from the access charge are unconvincing, unproductive, and should be unnecessary. I urge the Commission to dismantle the access charge system, which has outlived its usefulness, and has been rendered obsolete by technical advances.

VII. Universal Service:

Many commentors proposed changes to the Universal Service program, but most do not fit their proposals into any sort of overarching or consistent framework. Based on my review of these submissions, I will expand and clarify my initial comments, in an attempt to more clearly articulate how I propose that the goals of universal service be achieved. The historic goal of universal service was to provide access to telephony to all US citizens/households, in particular to assist low income or rural households to obtain telephony at affordable rates. When the only

communication network was the telephone system, it made sense that the scope of universal service be focused exclusively on telephony, and when telephony was provided exclusively by monopolies, it was natural and efficient to administer universal fund subsidies directly through the carriers. Telephony is no longer the only important communication application, and the availability of communications applications from multiple competing vendors calls into question how best to distribute universal service subsidies. I propose:

1. Congress and the Commission must define which communications applications are essential for every citizen, and for which the universal program will work to ensure access for all. Telephony has been the only such application to date, but over time, the list of essential communications applications might well be expanded[7]. At some point Instant Messaging, Email, the World Wide Web, and even broadband Internet connectivity itself might be added to the list of essential communications services to which every citizen should have access.
2. The Commission should determine what amount of money must be raised to provide the required level of support for universal service, and only this amount should be raised and distributed.
3. Only the users and providers of communication services and applications that are included on the list of essential applications should contribute to the universal service program: for example, if broadband Internet access is not deemed an essential service for which universal service seeks to provide to all citizens, then broadband Internet providers should not be required to contribute to the universal service fund.
4. Finally, in an era of competitive communications service providers, it no longer makes sense to distribute universal service funds directly to carriers: end users of communication services and applications that are eligible for universal service assistance should be provided vouchers (which I will call "communications chits") that they can spend for communications services at the provider of their choice. This is similar to how financial assistance for food is implemented in the US. Those citizens that qualify for financial

[7] "Has The Internet Become Indispensable?", Hoffman, Novak, and Venkatesh, Communications of the ACM, July 2004, Volume 47, Number 7

assistance for food are issued "food stamps" that are redeemable at virtually all retail grocery locations. Recipients of food stamps are able to choose the vendors that provide the variety of foods they need, at costs that maximize the buying power of their assistance. One might envision that a low income single working parent might choose to spend her communications chits on a basic mobile telephone service that she can carry with her at work, so as to be reachable by her children's school or childcare provider, instead of wire line telephone service at her residence, where she and her children spend precious few non-sleep hours. Another example might be that a low income family might combine their communications chits with some of their limited "discretionary" income on broadband Internet access so their children have access to the educational benefits available to those with Internet access, and the marginal cost of adding broadband VoIP telephony might be a better choice for this family than a conventional wire line telephone. Finally, a hearing-impaired person might best spend his communication chits on a mobile data device, that provides access to Instant Messaging from anywhere he is, rather than TTY service linked to landline telephony at his residence.

Consistent with these principles, I remind the Commission of my proposal that universal service for telephony be funded via access to NANP telephone numbers, and I urge the Commission to adopt the changes I propose for the universal service program.

VIII. Relationship of IP-Enabled Services to CALEA and Law Enforcement:

In the NPRM, the Commission stated that it intends to initiate a separate rulemaking on the subject of law enforcement's requirements, CALEA, and IP-enabled services. Given the Commission's stated intentions to initiate a separate proceeding on this topic, I have refrained from commenting or making proposals on this topic in my initial and reply comments on this NPRM, but I note that several commentors on this NPRM have not shown similar restraint. I request that the Commission direct that all such comments and proposals be re-submitted when the forthcoming upcoming proceeding focused on this topic is issued.

IX. 911/E911 Support:

Most commentors agree that telephony provided as an application over IP should support emergency services via the "911" phone number, and urge the commission to forestall regulation in this area until ongoing industry cooperation efforts/workgroups focused on this issue run their course. I have been monitoring the work of NENA and the IETF in this area, and I note and agree that lots of good work and progress is being made, and I note with appreciation Nortel's whitepaper "An Architecture for E9-1-1 for VoIP Networks" that was submitted as part of Nortel's comments on the NPRM. However, I believe the Commission should help to focus these efforts by setting clear goals for these VoIP-E911 efforts to achieve. As I proposed in my original comments, a crucial enabler of E911 support for VoIP-based delivery of telephony is direct support for VoIP phone calls by the PSAPs themselves. Providing a legacy circuit-switched TDM interface to each PSAP and expecting each VoIP-based telephony provider to deploy gateways to each PSAP in the US will place a tremendous burden on VoIP-based telephony providers. (I note that no current ILEC has connections today to *every* PSAP in the US, only the PSAPs within their service territory) I urge the Commission to set the goal that PSAPs must provide a native VoIP-based interface, and interconnect to all comers via the Internet. Just as Signaling System #7 is the standard signaling protocol for legacy circuit-switched TDM carrier interconnect today, the Commission should designate the IETF's Session Initiation Protocol (SIP) as the standard carrier integration protocol for VoIP, and the PSAPs interface to VoIP-based telephone calls must support SIP. As good as many of the aforementioned industry initiatives around VoIP-E911 interconnect are, most are not currently on a trajectory to define a solution where the PSAP itself must support VoIP interconnections,

and so a clear Commission pronouncement of this goal would be of considerable benefit to all participants.

X. Request for Clarification of Scope of Emergency Services:

It is clear from reading the various comments on the NPRM that different parties have different perspectives on the overall scope of consumer access to 911-based emergency services. Years ago Congress and the Commission set the public policy goal of access to emergency services via 911. In that earlier era, when there was little or no choice of carriers for most consumers, it made sense to require the monopoly LECs to provide delivery of 911 calls to PSAPs, because if the monopoly LECs did not support 911, then callers had no other options.

At present, with increasing facilities-based competition for telephony (LECs and Cable providers), mobile telephony, and now with VoIP-based telephony over broadband, consumers have many choices of telephony providers. Given these significant changes, it is appropriate to re-examine the government's requirements on carriers in this area. Given this increased competition, the Commission could release carriers from specific obligations to provide 911 services, and allow consumers to choose carriers that provide 911 routing if they so desire. From an individual rights perspective, at present, it seems that one does not have the right to purchase telephony service that doesn't support 911 routing. I question if this is a necessary and justified elimination of personal choice. I note that many consumers have access to multiple telephones, wire line phones at home, mobile phones almost everywhere, and wire line phones at work. Do all phones everywhere need to support 911 routing? I ask the Commission to reflect on the appropriate tradeoffs between consumer access to emergency services via 911, government mandates that require all telephony carriers to provide for 911, costs to consumers for redundant access to 911 services from every telephone they encounter, and the ability of new services and

applications be developed and deployed at low cost and in an environment with minimal regulatory burdens, and to clarify the overall goals and scope of E911 rights, responsibilities, and regulation.

XI. Conclusion:

I thank the Commission for this opportunity to comment on its proposed rulemaking on IP-Enabled Services.

Respectfully submitted,

DONALD CLARK JACKSON

July 14, 2004