

# Whither Telecommunications Regulation?

The Federal Communications Commission (FCC) recently issued a Notice of Proposed Rule Making (NPRM) for IP-enabled services, heralding a conversation that will arguably result in changes in the way voice, data, and video services are priced, procured, and ultimately consumed by both institutions and individuals. This conversation will take time, perhaps several years, to complete and will ultimately involve all of us and probably Congress. As part of this conversation, the Integrated Communications Strategies (ICS) and Broadband Policy Group (BPG) Working Groups of the EDUCAUSE Net@EDU earlier this year collaborated with the EDUCAUSE Policy Office to prepare a response to the NPRM.<sup>1</sup>

## Issuance of the NPRM

Why did the FCC issue the NPRM? First, the fundamentals of communications have changed because of the evolution of converged communications—the delivery of voice, data, and video services over a single infrastructure. One outcome of the evolution is a series of complex policy issues. On the one hand, we are pursuing convergence because a service-rich and efficient environment will evolve when IP-enabled services are together on a single infrastructure. On the other hand, the legacy regulatory and revenue structure that supports valuable services is being rendered ineffective. How do we move to an IP-centric model while continuing to support services such as 9-1-1, access for the disabled, and universal-access goals? What should we do about anticompetitive behavior while we continue to nur-

ture the innovative environment created by the Internet? Underlying all of this is the need for high-quality universal broadband access.

Second, the characteristics of the services that can be delivered with the technology have changed, especially with respect to wonderful enhancements to access for the disabled and 9-1-1 services. An all-IP infrastructure makes it possible for an individual calling 9-1-1 from a device equipped with a digital camera to send a photograph of an accident scene to

the responder. An emergency center's response to the caller could include information on how to perform a medical procedure such as CPR, driving directions to the hospital, and notification to the hospital. In addition, the ability to provide simultaneous voice, video, and text means that mail or messages can be converted from text to voice for the blind. Videoconferencing allows sign language and lip-reading to be used by the deaf. Video Relay Services enable a person to use his or her native language, transfer it through an interpreter, and have it delivered in the recipient's native language, whether in text, sign, or voice format. Importantly, these services can be delivered for less cost and in more user-friendly ways than ever before.

And third, the legacy models for generating revenues for public policy goals have been highly disrupted. Consider the Internet2 community's work on Session Initiation Protocol (SIP) and presence. Do we tax a PDA because its owner wandered into an SIP-aware network and her child can thus have a voice, video, or instant messaging (IM) "interaction" with her? Does she get to decide whether the interaction is voice, video, or IM based on the amount of the tax? Even simply singling out voice services would be difficult. For example, VoIP is now available through various paid and nonpaid versions. Furthermore, organization-specific VoIP services can travel over both intranets and the Internet but would generally not be noticed as voice traffic because the organization can deploy an IM server that provides VoIP as well.

Now imagine that this PDA owner is currently in a tax-exempt location and is

The ICS and BPG Steering Committees <<http://www.educause.edu/netatedu/>> invite you to contact them to discuss either this document or the activities of the working groups.

### For ICS:

Douglas Carlson, New York University  
 Tamara Closs, Georgetown  
 Michael J. Enyeart, Indiana University  
 James A. Jokl, Co-Chair, University of Virginia  
 Mark Katsouros, University of Maryland  
 Holly King, Northwestern University  
 Christopher Peabody, L. Robert Kimball & Associates  
 E. Michael Staman, Co-Chair, Macon State College  
 Steve H. Updegrove, Penn State University  
 Jose J. Valdes Jr., Colorado State University  
 Wendy Wigen, EDUCAUSE Staff Liaison

### For BPG:

J. Gary Augustson, Penn State University  
 Earving L. Blythe, Virginia Tech  
 Steven C. Corbato, Internet2  
 Timothy Lance, NYSERNet  
 Bonita M. Neas, North Dakota State University  
 Michael M. Roberts, The Darwin Group  
 Daniel A. Updegrove, University of Texas-Austin  
 Garret Sern, EDUCAUSE Staff Liaison

helping her child with math homework. She begins moving from her current location, intending to go back to the office. Outside, the PDA seamlessly switches to the cellular infrastructure. Along the way, a transition is made to an 802.20 service and then to an 802.16 service in the parking lot outside the office. After that, the call is continued in a Wi-Fi environment inside a taxable corporation. Potentially dozens of distinct service/transport combinations are involved on just one end of this particular call. If the PDA owner decides to have the PDA transition the call to a laptop to support a richer set of video services, the possible combinations double. Next year there will likely be another alternative, and the potential number of services will double again. Again, this example is for just one end of one conversation, using very few services, devices, and bandwidth alternatives. Creating a coherent, scalable taxation model using the present system seems improbable at best.

The problem is compounded when we consider an international context. To what extent will it be possible to simply move a service offshore, away from any country with an unfavorable regulatory environment? With the current rapid growth of broadband in homes, it would seem that only draconian measures could prohibit connection to any service worldwide, thereby making the existence of onshore rules moot.

### Options

The FCC NPRM asked three central questions. First, it asked if separate IP-enabled applications could be distinguished for regulatory purposes. The answer is that although it is theoretically possible to distinguish IP-enabled services by analyzing the network protocol number of each packet, the impracticality of such an approach makes the realization of the theory unlikely. Such an analysis would overload all known telemetry systems and network routers. Furthermore, some VoIP phones use random network ports, and as seen in the “music-on-demand industry,” users can easily circumvent controls based on network port numbers.

Second, the NPRM asked whether the physical infrastructure should be identified separately from the applications for regulation or taxation purposes. The eco-

nomics of building an infrastructure are considerably different from those of designing and implementing an application. Barriers to entry are huge, in the billions of dollars. Incumbent providers are well established and few in number; any student of economics would recognize the opportunity for anticompetitive behavior. But taxing the transport layer in order to support socially desirable programs may not be the answer. Technically, it can be done, but in reality, capacity is just another proxy for differentiated services because more capacity is needed for higher-level services. And taxing transport may well run counter to other policy imperatives, such as President George W. Bush’s goal of universal broadband access by 2007.

Finally, third, the NPRM asked about alternatives to using infrastructure or services as foundations for generating revenues for public-policy purposes. The answer here is that there are many alternatives. Without crafting specific solutions (work that is best accomplished by others), we can consider the following as places to begin working on them:

- The nature of the Internet is such that it may be better to have federal rather than state administration of programs to achieve policy goals.
- A program similar to the Rural Electrification Project of the 1930s could work well. This successful program was funded from low-interest federal loans and was administered through local cooperatives, many still in existence today.
- A model that places a small burden on the purchase of every Internet-connectable device could serve as a basis for distributing costs to those who use the resource.
- Generating revenues through the general fund to maintain the Universal Service Fund (USF), 9-1-1 services, and disabled-access programs might prove to be a more efficient, scalable, and politically acceptable alternative to the current myriad of sometimes difficult-to-justify fees on telephone bills. A “general fund” approach could be justified because universal broadband access has been identified as a national priority.

### Concluding Comments

Although those issues of anticompetitive behavior that require regulation in the legacy telephony world will surely emerge in the Internet world as well, an approach based on an IP-centric model is needed to ensure that this new technology remains vital and innovative. With this in mind, the EDUCAUSE response to the NPRM recommends the following:

- Regulation of the Internet should be based on the concept of a layered IP-based model.
  - The applications layer (including VoIP) should remain as regulation-free as possible.
  - The transport layer may require some regulation to ensure affordable and ubiquitous broadband access.
- The USF needs to be updated and re-focused on the goal of achieving universal broadband access.
- Public services such as 9-1-1 and access for the disabled can be greatly enhanced in the IP world, and new revenue models to support them are necessary.

Three critical dimensions—continuous innovation, provision and funding of public services, and affordable access to broadband—must be kept in balance if the IP world is to move forward expeditiously. The NPRM provides an opportunity for the FCC to break from the burdensome rules of the legacy telephone world and to provide for a rapid yet thoughtful and judicious transition to IP-enabled services.

### Note

1. This article draws heavily on “Comments of EDUCAUSE before the Federal Communications Commission in the Matter of IP-Enabled Services,” May 28, 2004, <<http://www.educause.edu/ir/library/pdf/net0408.pdf>>. See also “Reply Comments,” June 28, 2004, <<http://www.educause.edu/ir/library/pdf/EPO0405.pdf>>.

**Dr. E. Michael Staman has held various technology management and leadership positions since 1966. He recently retired as Vice Chancellor and CIO for the University System of Georgia to accept the Peyton Anderson Endowed Chair in Information Technology at Macon State College, where he is happily engaged in teaching, research, and writing.**

