

## Campus Networks, Post-Napster

Two years ago, many higher education institutions, including Indiana University (IU), responded to the exploding use of Napster and the corresponding congestion of college and university network resources by blocking Napster. Despite assumptions made by armchair IT quarterbacks at that time, this was purely a nuts-and-bolts action: if Napster had not been blocked, it would have severely degraded a service directly supporting the institutions' primary missions. The decision was consistent with responsible management of a very finite shared resource. Not surprisingly, however, a minuscule but very vocal minority of students strongly criticized the decision made by these institutions. The students claimed they had a right to unlimited and unregulated use of the institutions' Internet connections because they paid network use fees. They also complained that these colleges and universities were restricting their right to free speech.

These were certainly the complaints heard at IU, where the student newspaper also got involved. The newspaper printed its own articles—sometimes skewed and sometimes blatantly incorrect—and distributed the story on news wires. The resulting media furor was extreme, bordering on ridiculous. Reporters wanted the IU administration to admit that the action had been taken because of pressure placed on the university by the music industry, even though that simply was not the case.

Nor had Napster use been paid for by IU students. There was (and is) no network use fee assessed to students as part of their student technology fee. Through

general funds, IU provides computing and network connectivity to students for their learning, research, and other academic endeavors. Faculty and staff share many of the same technology services, including campus networks and (at the time) the single Internet connection. Since networking is a shared community resource, when someone overuses or misuses it, this adversely affects the entire university community. The use of network-intensive applications that are recreational—that do not relate to teaching, learning, research, administration, or other core activities—is acceptable only so long as those applications do not interfere with the primary use of the network connection.

The IU administration put a great deal of effort into helping students understand exactly what their student fees were supporting and into clarifying policies associated with the appropriate use of university resources. Much of the "network fee" myth was dispelled, to most students' satisfaction. But IU, like other higher education institutions, felt uncomfortable blocking the flow of any kind of information on the network. The action seemed antithetical to free inquiry, somehow, even though the blocking was designed to keep information flowing. After two IU network engineers conducted some very good research into Napster and other

peer-to-peer applications,<sup>1</sup> and after Napster made some changes to the application to make it a better network consumer, the IU administration decided to unblock the Napster application but to limit the amount of total bandwidth that Napster could consume.<sup>2</sup>

With this as background, it's interesting to think about the entire Napster episode and consider how things are today. Colleges and universities are still reluctant to maintain filters or to restrict the flow of information, at least based on content.

But whereas the belief used to be that filters were necessary to control irresponsible student behavior with scarce resources, it has become clear—at IU, at least—that students will behave responsibly when given the opportunity to pursue some amount of recreational and other personal use of the network connection in their rooms and when the consequences of irresponsible use feed back tangibly.

Campuses have long provided lounges and other common spaces with televisions, game tables, and other recreational facilities. Recreational Internet access must be seen in the same context. Today's students do not use computers and the Internet in the same way that their parents or grandparents did. Since college and university administrators are typically in the generation of the stu-

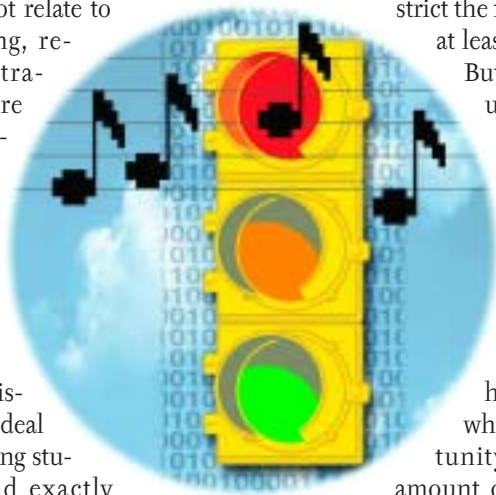


Illustration by Steve McCracken. © 2002

dents' parents and grandparents, they tend to make network-use decisions based on the peripheral role the network played in their college/university experiences. But for today's students, the network plays a central role, and the computer is a composite tool, useful for both their academic work and their recreation. In responding to peer-to-peer applications, administrators have had to become sensitive to the different recreational culture of current students.

Today, the Residence Hall network at IU-Bloomington has a dedicated connection to the commercial Internet, a connection that is separate from the main campus commercial Internet connection. When that second connection was activated, IU removed the limits that were in place for peer-to-peer applications (though for legal reasons, the university blocked Napster itself until its effective demise). Nearly immediately, many students in the residence halls started complaining that their Internet connections were painfully slow. Analysis showed that the new bandwidth was already being consumed by Napster-like peer-to-peer applications such as KaZaA and Audio-Galaxy. After collecting the usage statistics, and correlating them with the complaints, IU staff described the situation to Residence Hall Student Government and suggested that the applications shouldn't be blocked but that there were ways to limit their consumption. The reaction from student government was unequivocal: "Students doing academic work should not have to compete with students consuming the network for recreational purposes." The university reinstated limits, but at a generous level. Complaints continued to come in, albeit fewer of them, and the usage analysis was repeated. Given the results, Residence Hall Student Government requested that the limits be made even tighter. There have been no further complaints.

So IU students may use peer-to-peer applications (though the university does aggressively fulfill its obligations under copyright laws and investigates allegations of inappropriate use). Students doing academic work in the residence halls have excellent network access as well. No applications are currently being blocked. Technologically, we're back

where we were, but the circumstances are very different. All involved learned much from this episode, as befits members of an educational community. Students have learned to balance competing demands for network bandwidth, and administrators have learned to help students make the right choices rather than impose what they think is best.

But what if bandwidth becomes so cheap that peer-to-peer applications can effectively be absorbed at the margin? IU is getting close to this situation—unless peer-to-peer demands grow commensurately. The Indiana I-Light optical fiber infrastructure—which links IU Bloomington, IUPUI in Indianapolis, and Purdue University in West Lafayette—will allow these institutions and others to aggregate our commercial Internet traffic at the Indiana GigaPoP in Indianapolis. These institutions will soon acquire OC-48 (2.4 Gb) capacity from the GigaPoP to the commercial Internet. At that point, IU expects to remove all limits to file-sharing applications; traffic will be blocked only if there are legal reasons to do so. Who knows what will happen as a result? This situation could provide fertile ground for students to devise innovative new recreational applications, begin their business careers, amass fortunes, and prepare to become major university donors.

### Notes

1. This research, which attracted the attention of Intel Chairman Andy Grove ("Napster Is Clouding Grove's Crystal Ball," *Fortune*, May 29, 2000), is summarized in a white paper: Mark Meiss and Steven Wallace, "IPv4 Address Selection for Distributed File Services," April 2000, <<http://bestpath.iu.edu/internetdraft.txt>> (accessed July 18, 2002).
2. Readers may recall that subsequently the band Metallica and its representatives filed a lawsuit against Indiana University and several other institutions. Because of various circumstances that need not be elaborated on here, this led the university to once again block the application. This, I believe, is a different issue from what I'm discussing here.

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