Special University Oral Examination

Circuit switching in the Internet

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Tuesday, May 21, 2002
Packard 101
Refreshments at 12:45pm
Talk begins at 1:00pm

Abstract

Electronic routers will not be able to keep up with traffic growth, if the Internet continues to grow at its current rate, and so something different -even radical- is called for. Circuit switching based on optical technology is a good choice for the backbone of the Internet, as it promises enormous switching capacity, way beyond that of routers.

Despite conventional wisdom, circuit switching is quite appropriate for the core of the Internet. There is some evidence that circuit switching is more cost effective, less complex and more reliable than packet switching. And based on response time and QoS, users would be quite happy with more circuit switching in the core.

In this talk I will describe TCP Switching, a novel way to introduce circuit switching at the core of the Internet. TCP Switching is evolutionary in the sense that it can be introduced without changing other parts of the network, and without modifying the end hosts. I propose the introduction of TCP Switching as clouds of circuit switches in the backbone of the Internet, with packet switches at the edges.

Finally, I propose a mechanism in which fine-granularity user flows can control the establishment of large, fat circuit-switched piped. These pipes interconnect edge routers and are established on demand as traffic patterns change. This mechanism might provide a simple way to extend TCP Switching to control GMPLS.