higher than the trivial shortest-path-first solution. Routing decisions need to be fast so as to be reactive to changes in the network traffic. Routing also performs an important role in the robustness of the network because in case of a failure, the routing mechanism has to restore the broken paths as soon as possible. One can speed up recovery if a disjoint backup path has been pre-computed and perhaps even pre-provisioned before any failure occurs.

Finally, the analysis of circuit and packet switching can have many other applications; especially, when comparing preemptive and non-preemptive systems with several parallel channels or servers. A short list of applications include:

- Router and switch crossconnects with few or no buffers. These crossconnects resemble a bufferless optical network where most or all buffers are at the ingress and egress points. The approaches that have been presented in this thesis could be applicable in this situation.
- Wireless access networks, in which orthogonal channels are used to increase the capacity of the access network.
- HTTP 1.1, where a client pipelines its requests through several parallel connections to a proxy server.
- Computer clusters, in which workloads are so large that it becomes very expensive to switch contexts, and so tasks need to be executed to completion.

7.2 Final words

Hopefully, the ideas in this dissertation will serve as a useful foundation for the design and architecture of future networks, and they will encourage further research on the integration of circuit and packet switching. This approach will allow us to use all-optical switches that scale and can cope with the rapid growth of Internet traffic.

Glossary

σ^2	Variance
$E[.]$	Expected value. Synonym for mean or average value
ASIC	Application Specific Integrated Circuits
ATM	Asynchronous Transfer Mode
CDF	Cumulative Probability Function
CMOS	Complementary Metal Oxide Semiconductor
DiffServ	Differentiated Services. RFC 2475
DRAM	Dynamic Random Access Memory
DSL	Digital Subscriber Line. A broadband access technology that works over local phone loops
DWDM	Dense Wavelength Division Multiplexing
FCFS	First Come, Fist Served, a scheduling discipline
FPGA	Field Programmable Gate Array
GMPLS	Generalized Multi-Protocol Label Swapping. Extension to MPLS that includes the use of circuits and wavelengths as paths
ICMP	Internet Control Message Protocol. RFC 792