

CS144

An Introduction to Computer Networks

Packet Switching

How a packet switch works (2)



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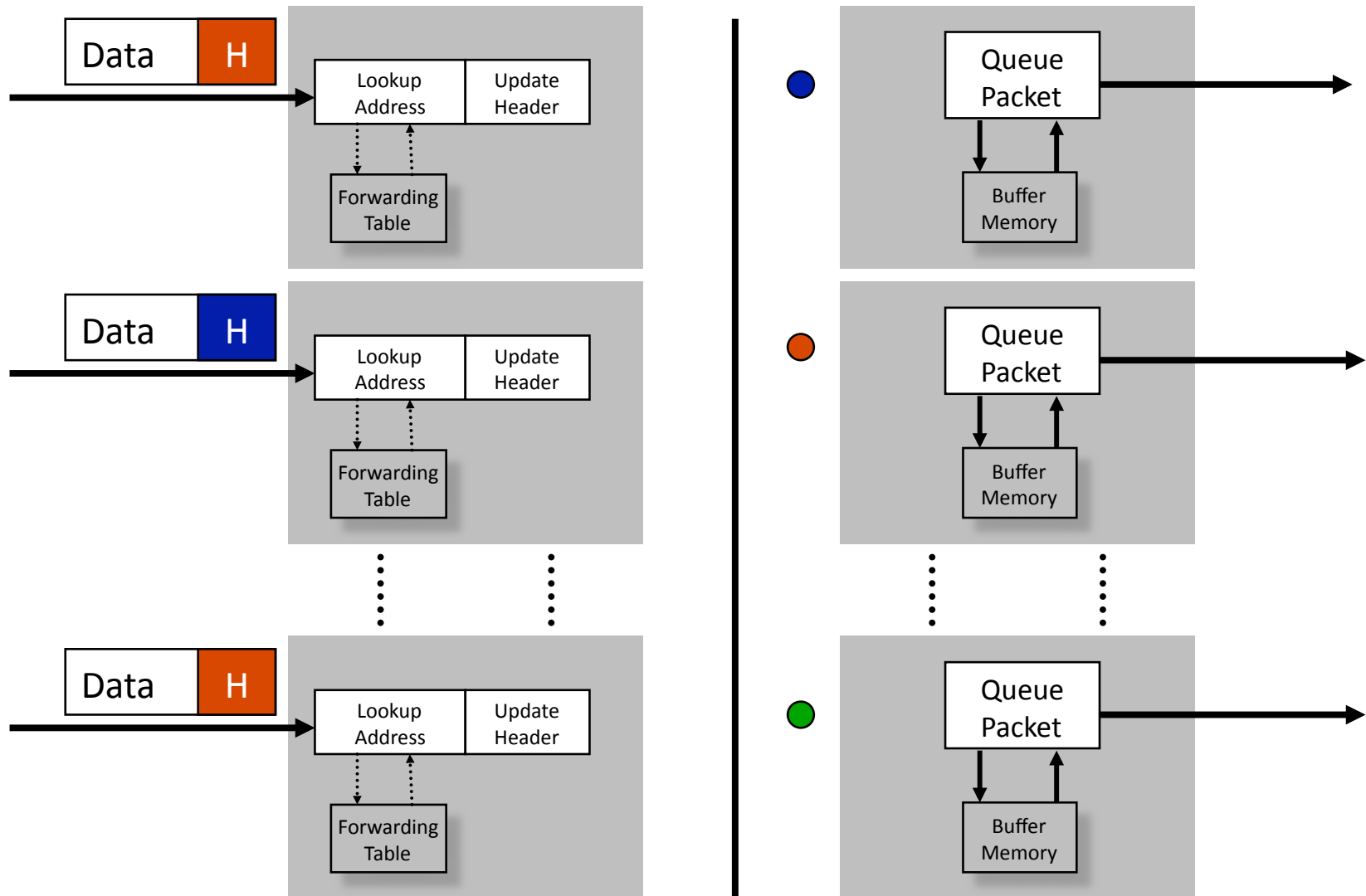
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Outline

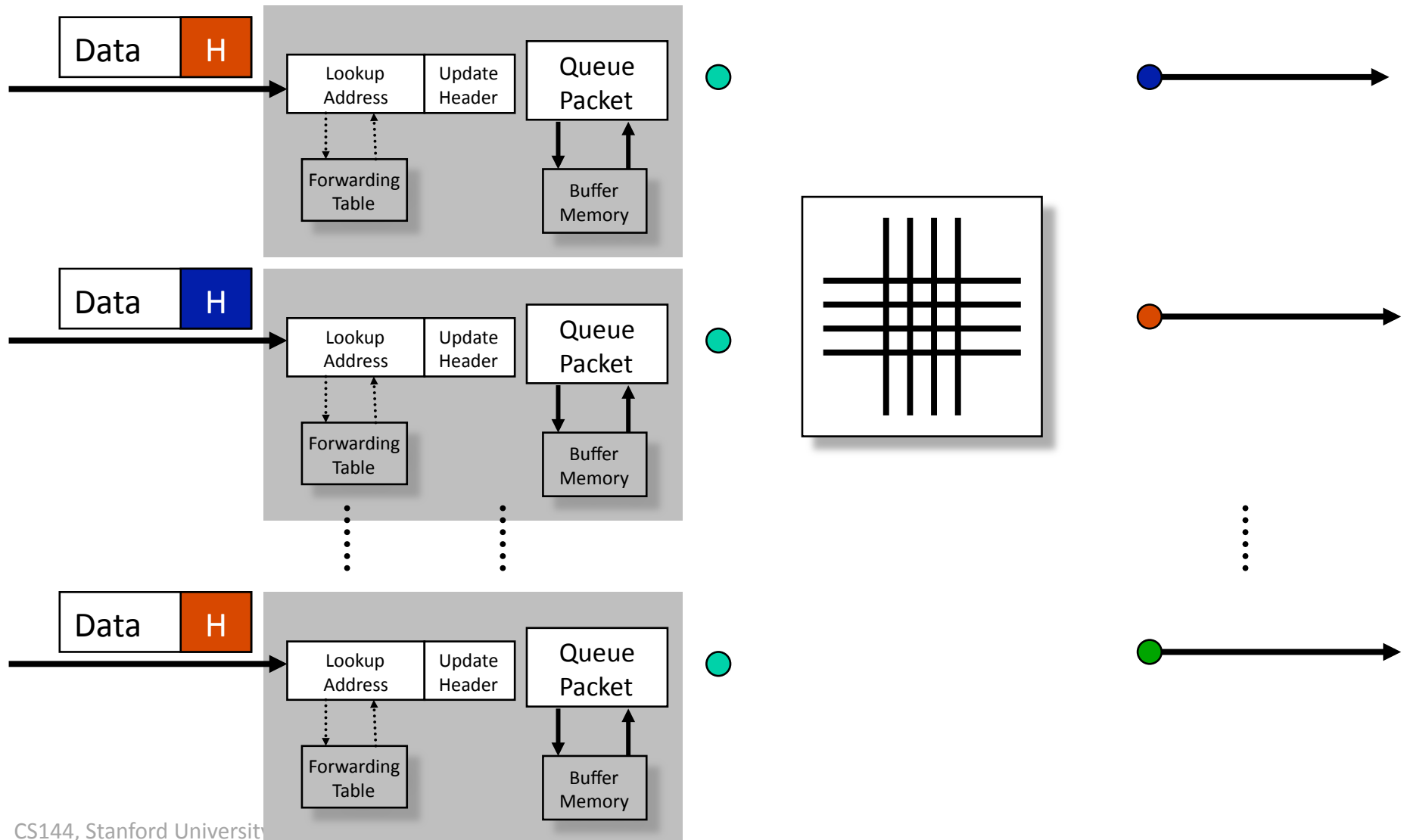
Switching packets to the egress port

- Output queueing and shared memory
- Input queueing and head-of-line blocking
- Virtual output queues

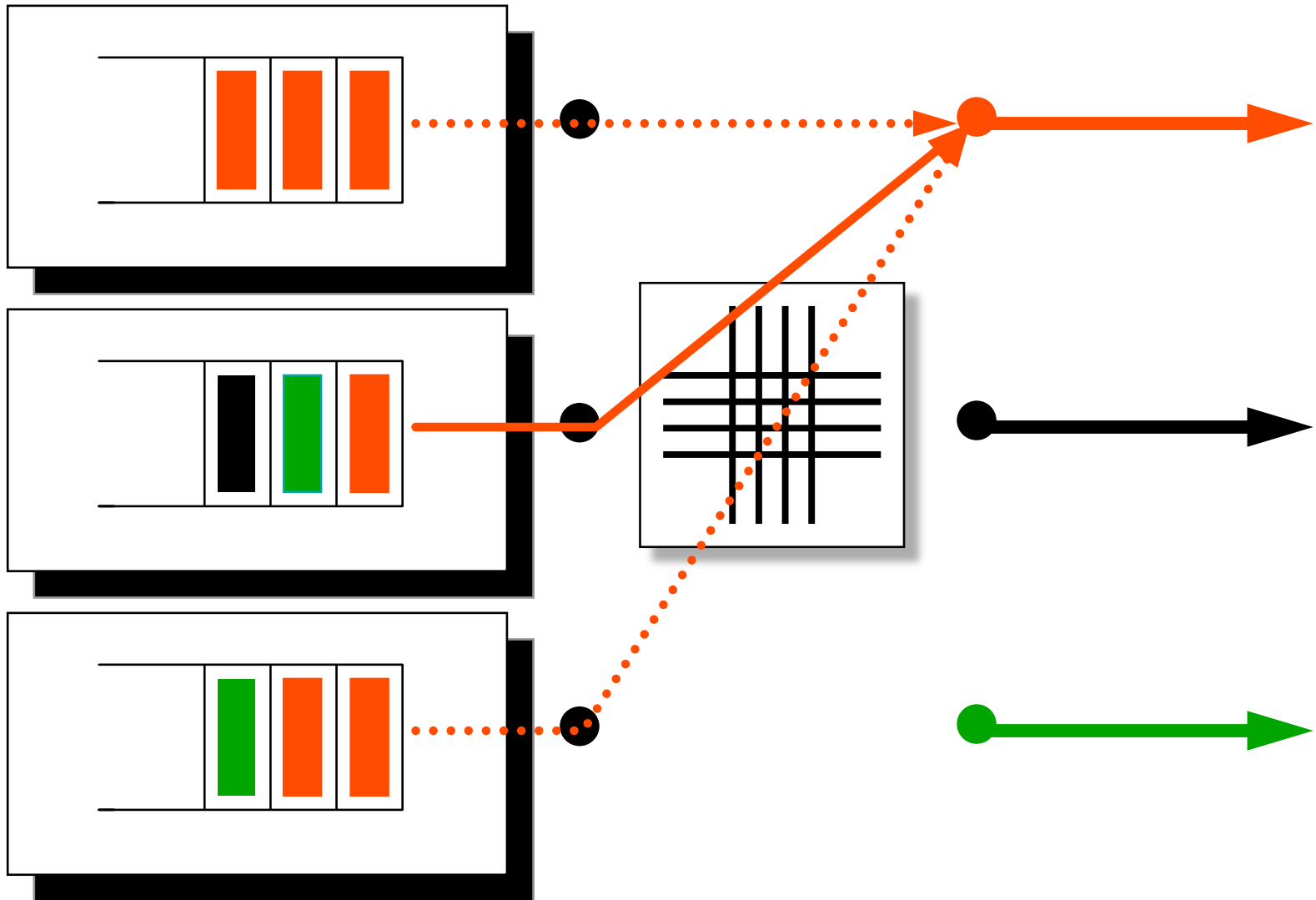
Output Queued Packet Switch



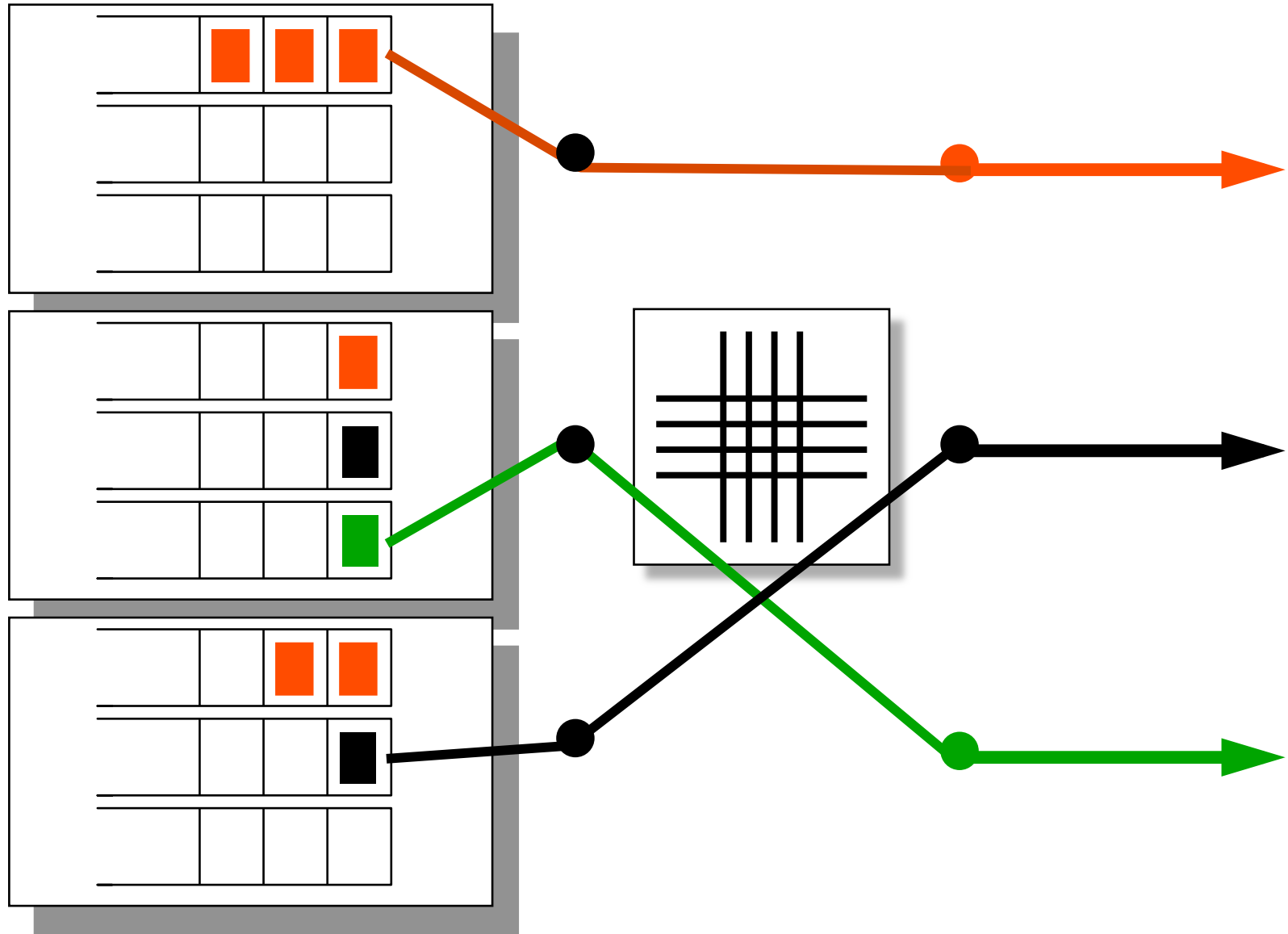
Input Queued Packet Switch



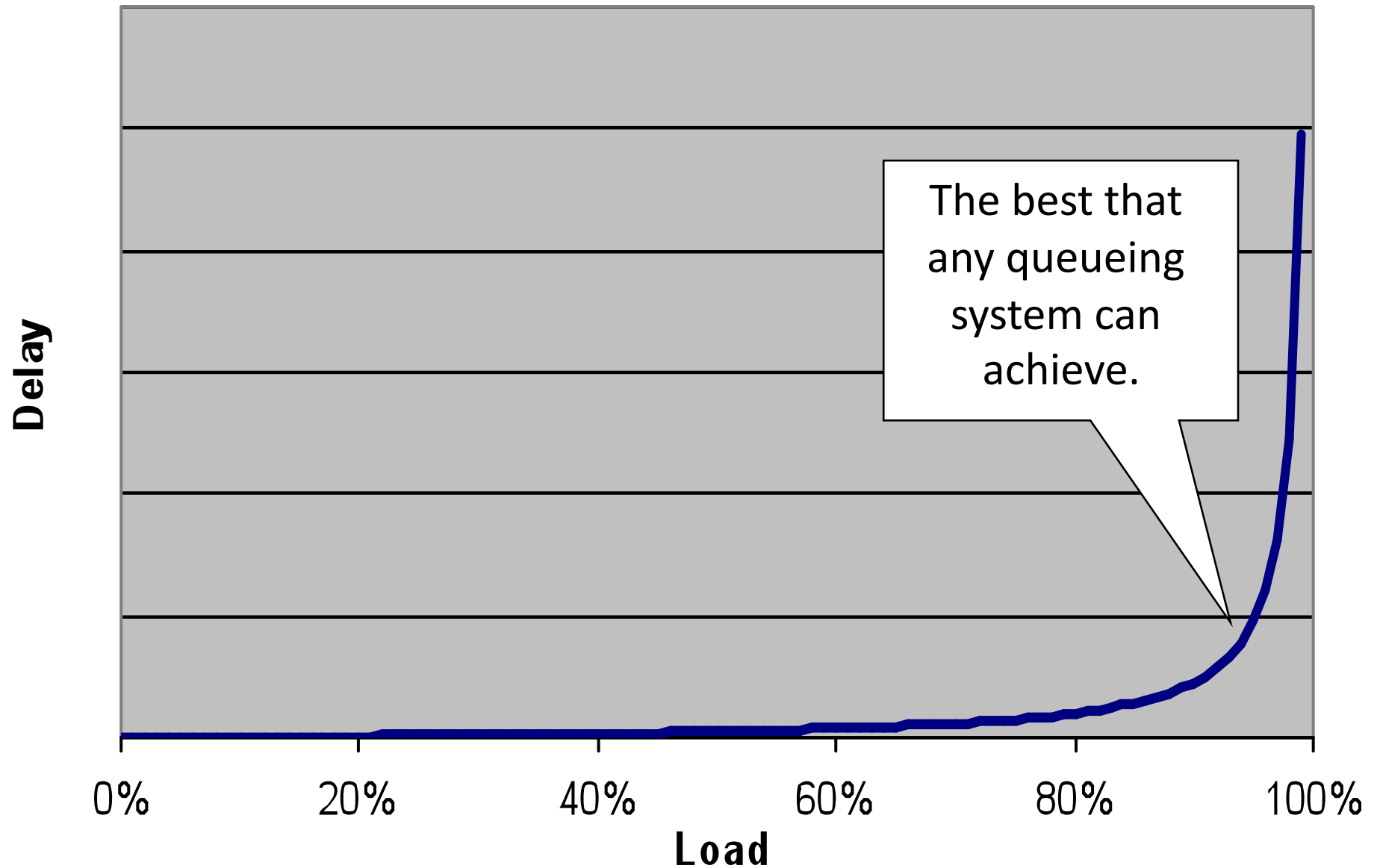
Head of Line Blocking



Virtual Output Queues



Output Queued Packet Switch

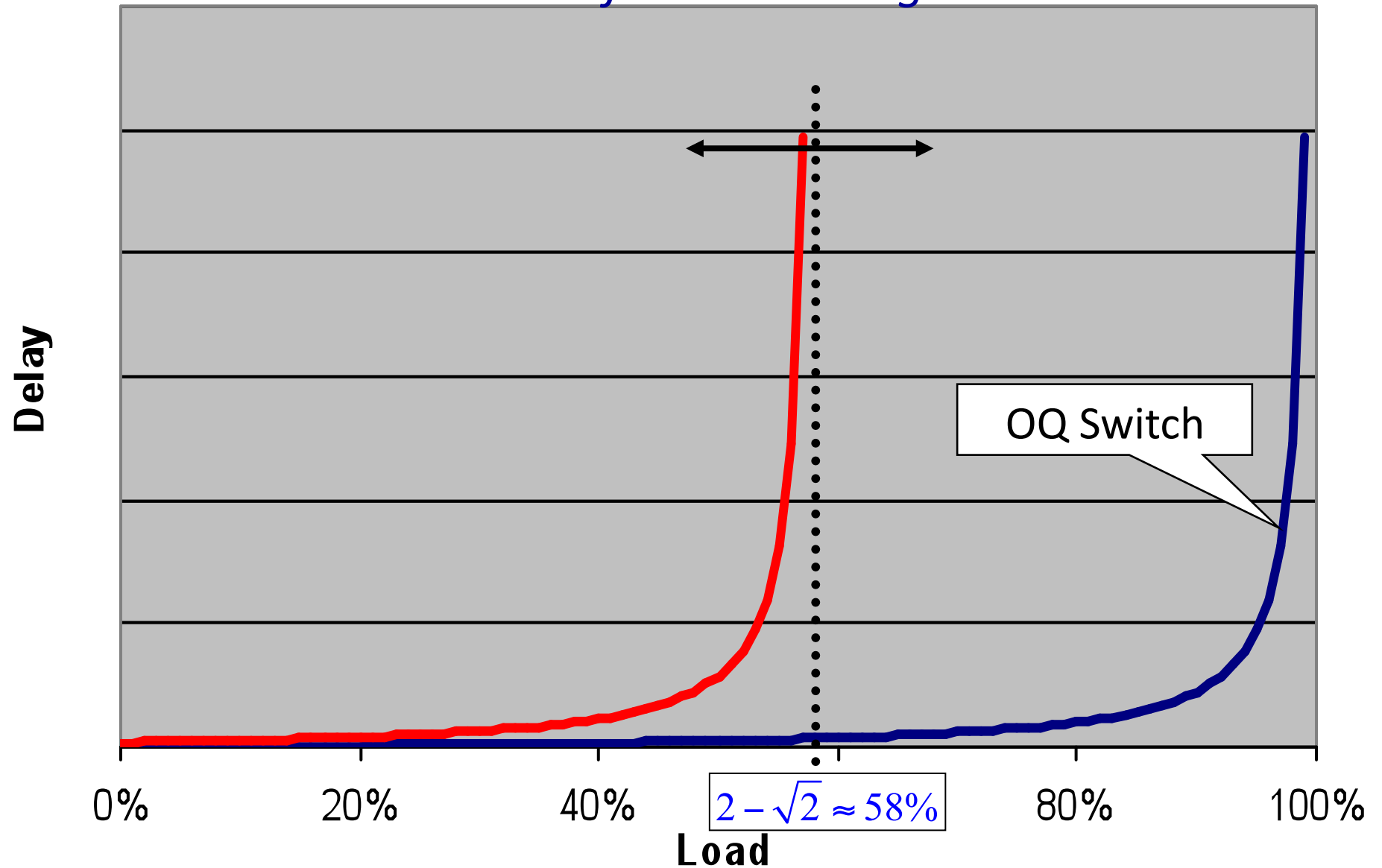


Properties of OQ switches

1. They are “work conserving”.
2. Throughput is maximized.
3. Expected delay is minimized.

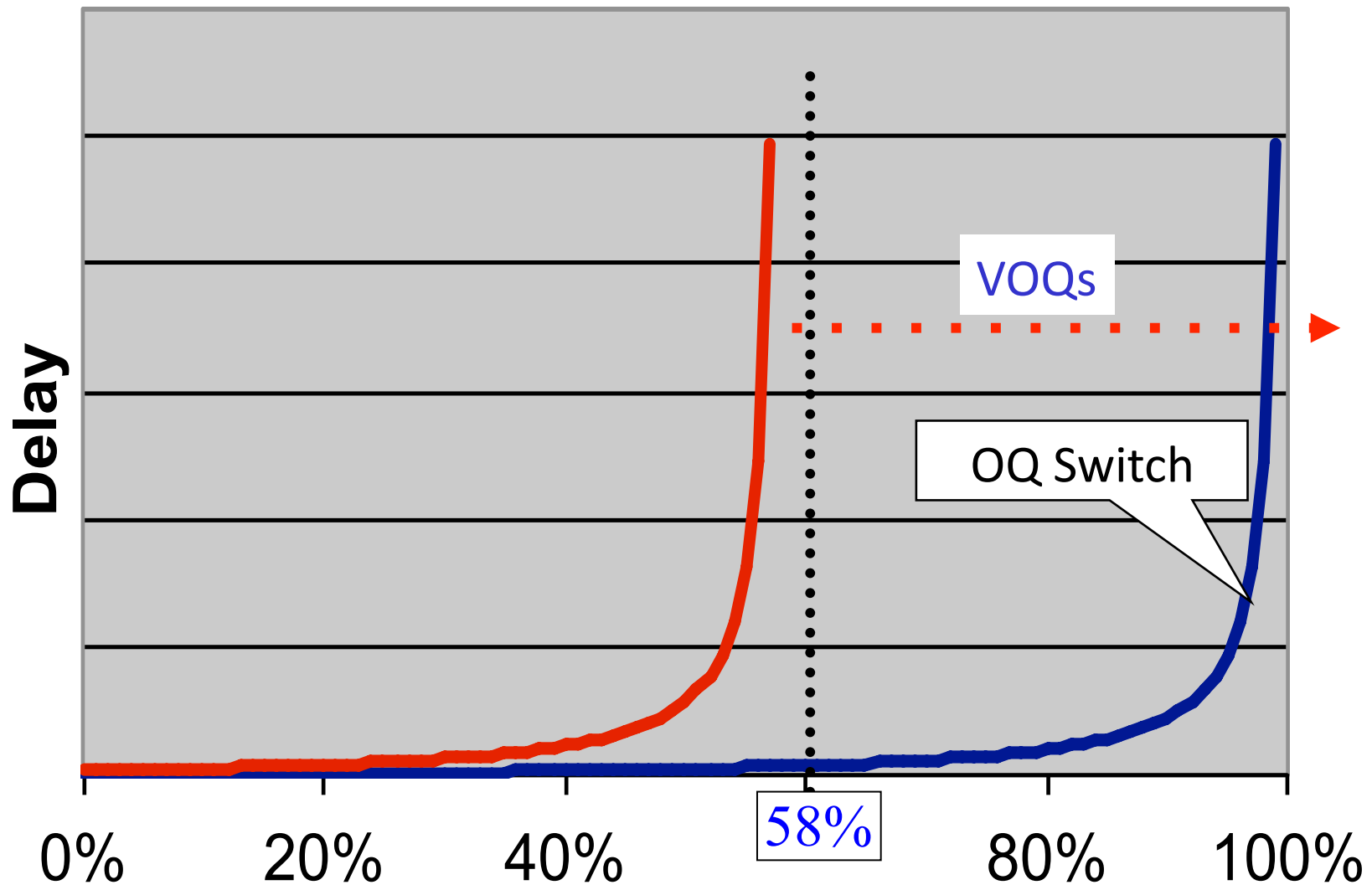
Input Queued Packet Switch

Head of Line Blocking



Input Queued Packet Switch

With Virtual Output Queues



A few last words...



Summary

Packet switches perform two basic operations:

- Lookup addresses in a forwarding table
- Switching to the correct egress port

The simplest and slowest switches use output queueing, which minimizes packet delay.

High performance switches often use input queueing, with virtual output queues to maximize throughput.