CS144
An Introduction to Computer Networks
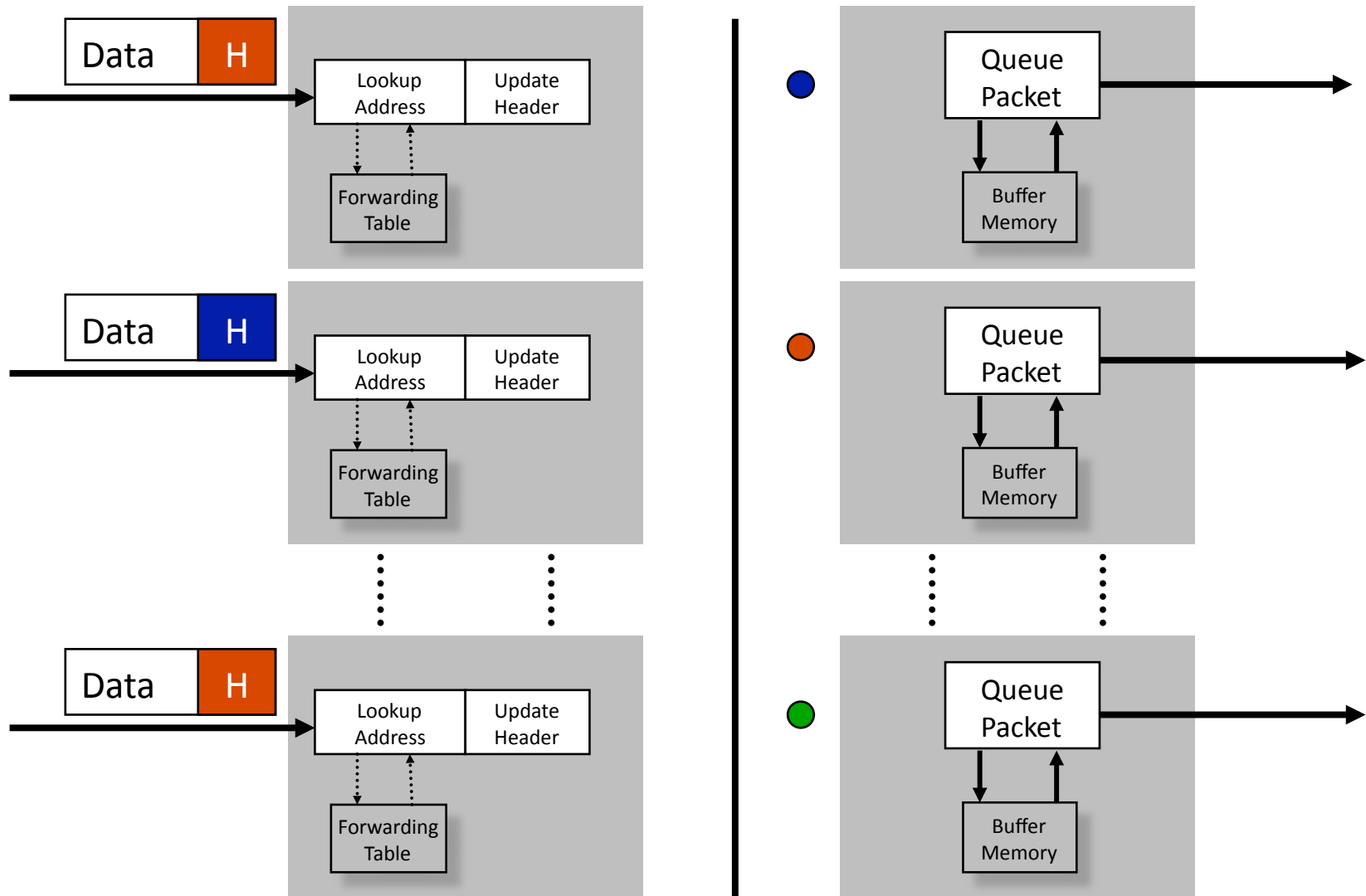
Packet Switching

Strict priorities and guaranteed flow rates

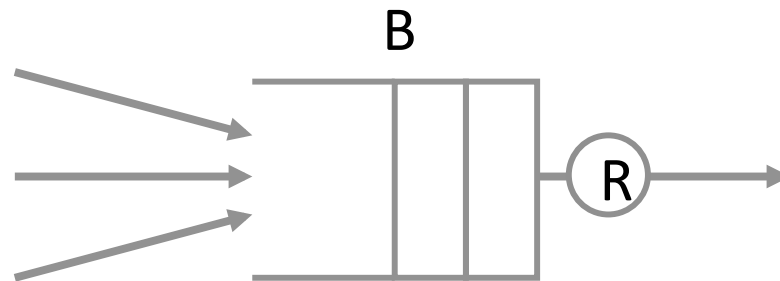**Nick McKeown**

Professor of Electrical Engineering
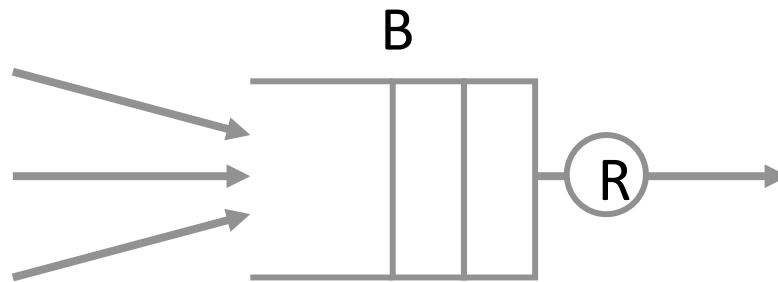and Computer Science, Stanford University
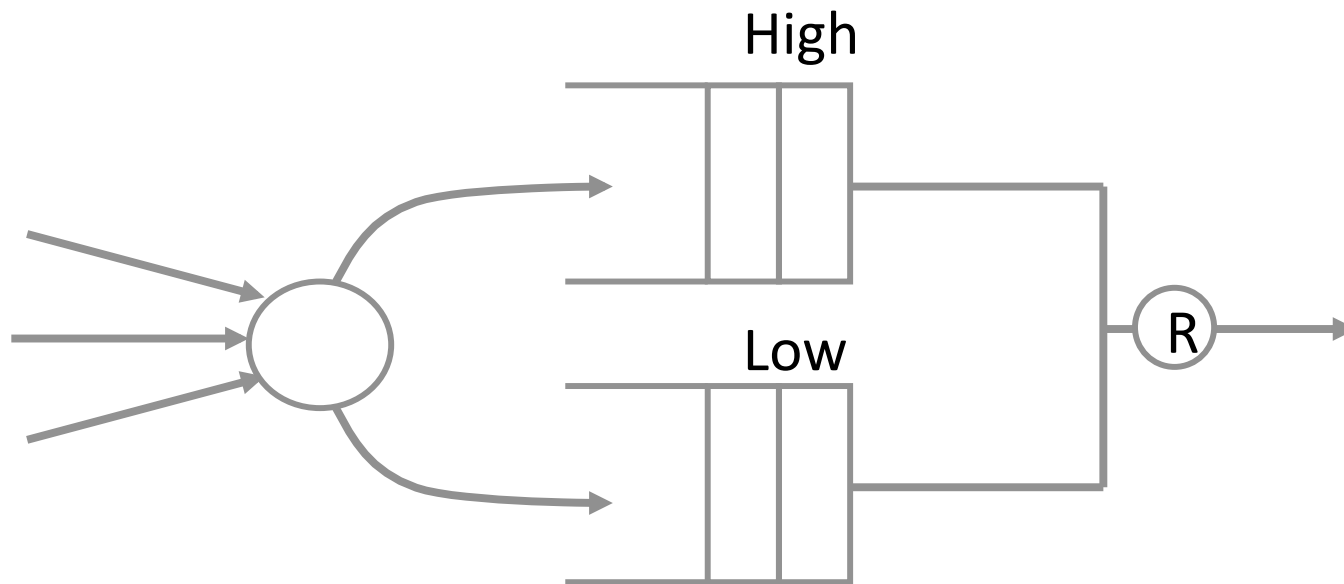
Output Queued Packet Switch

FIFO is a free for all
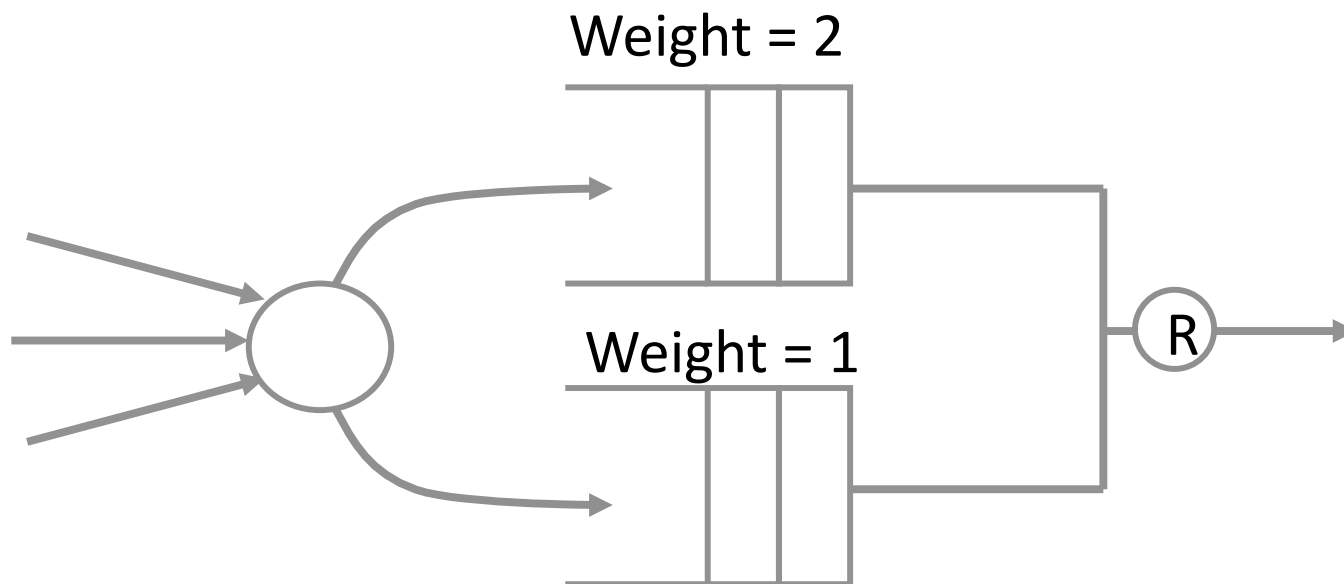
Outline
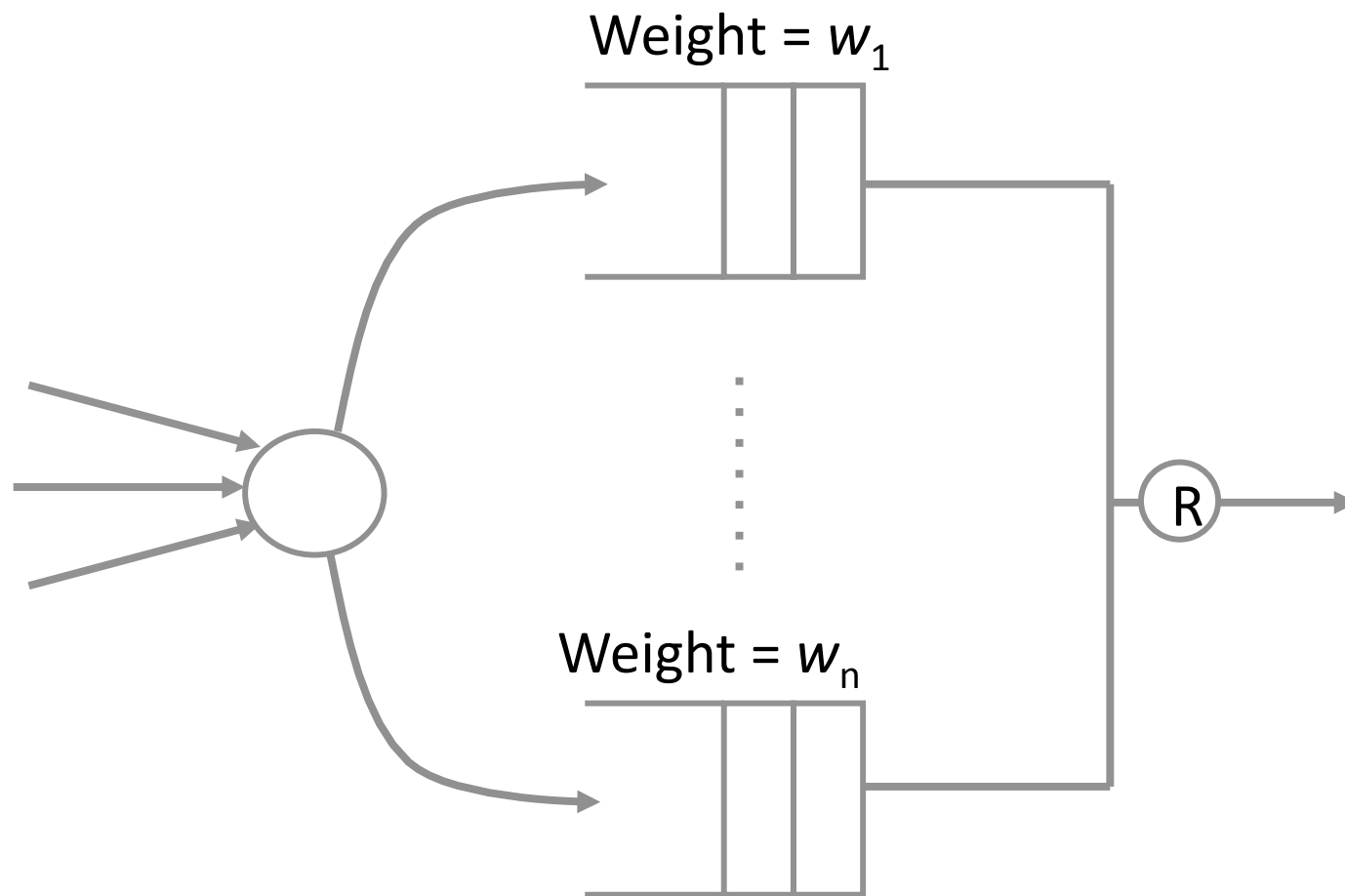
1. Strict priorities

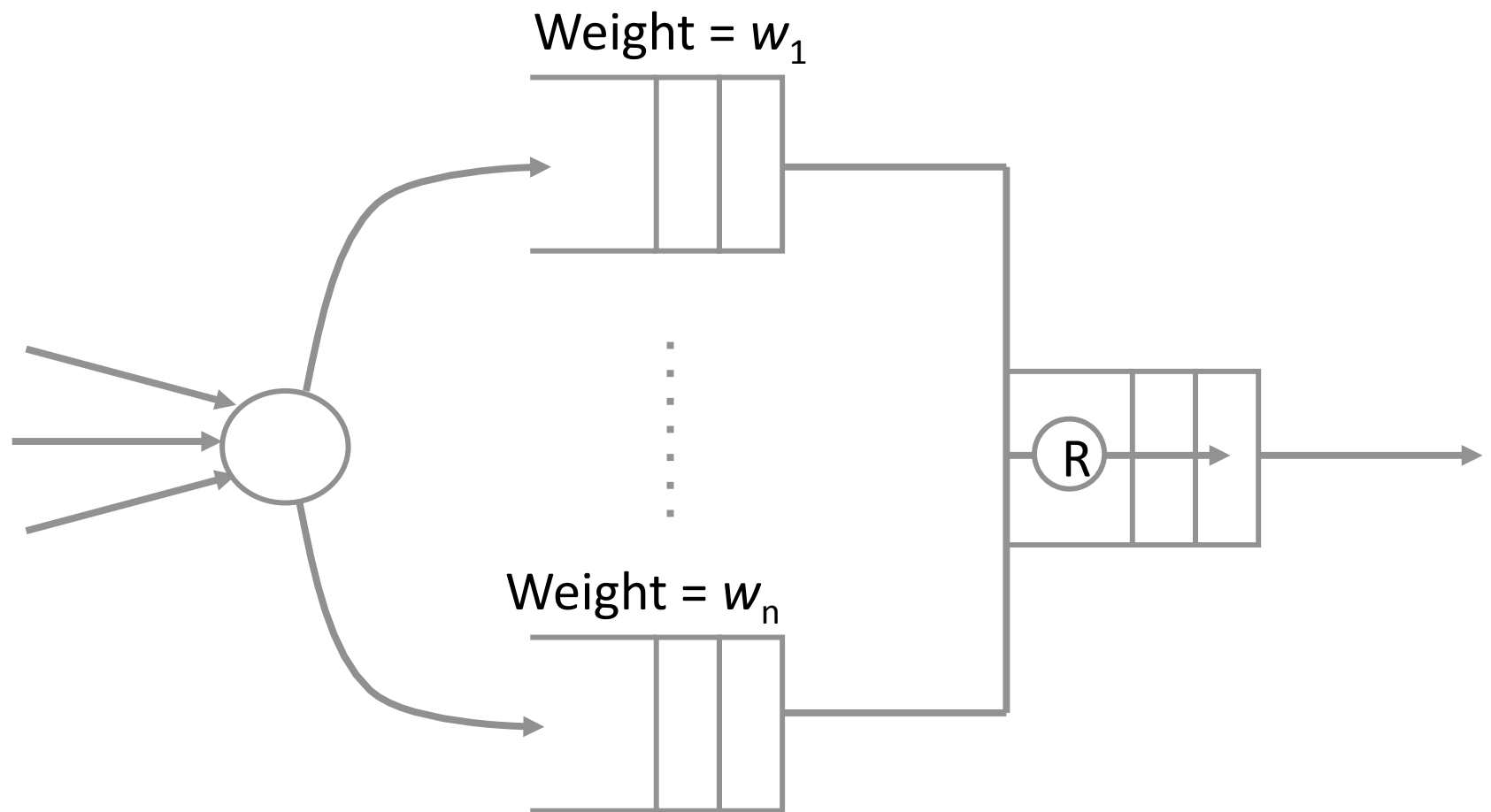2. Rate guarantees

Single FIFO

Strict Priorities

High

Low

R
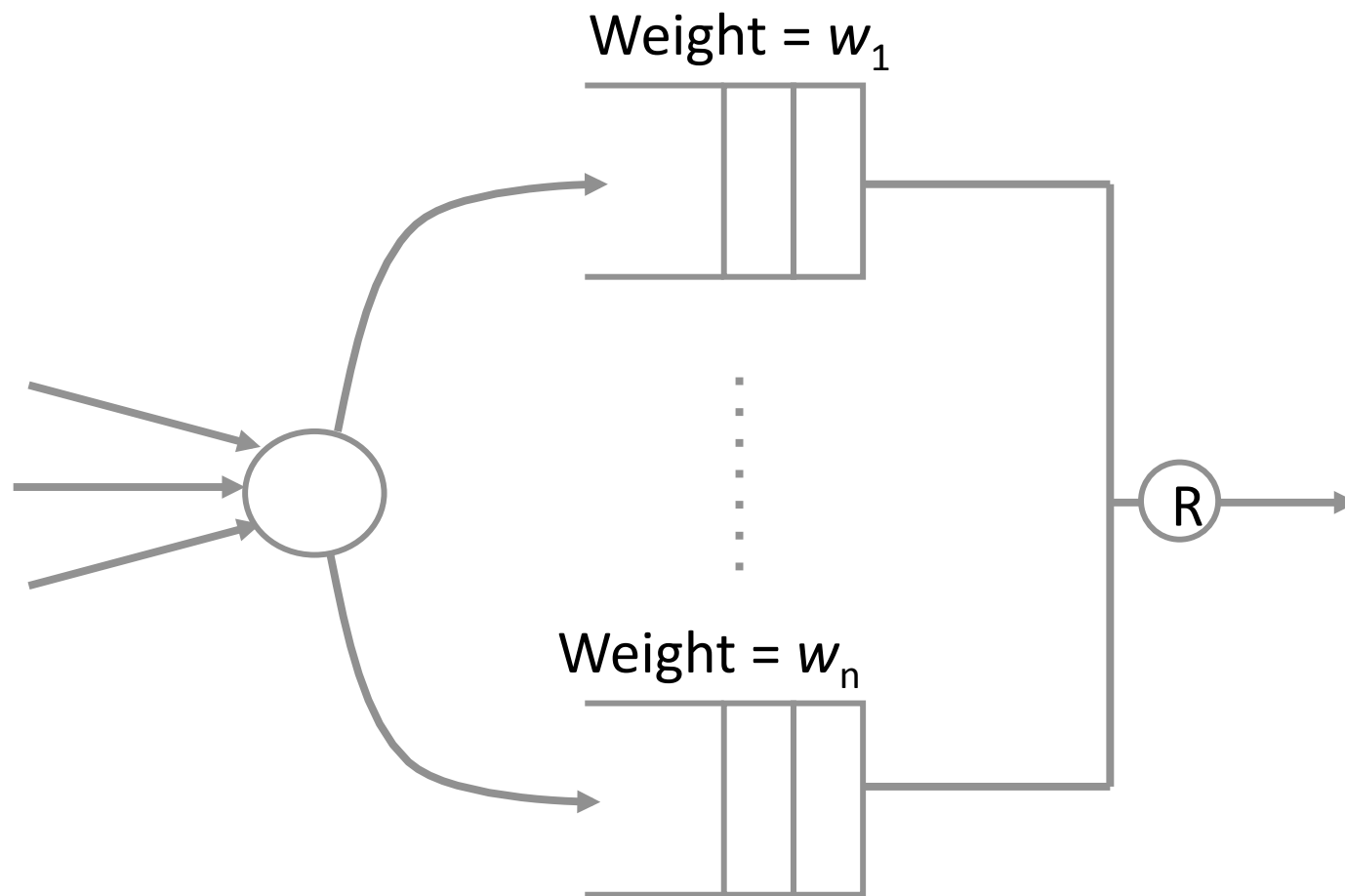
Weighted Priorities

Weight = 2

Weight = 1

R

Weighted Priorities

Weight = w_1

Weight = w_n

R

What we'd like

Weight = w_1

Weight = w_n

R

A practical way to do it

Weight = w_1

Weight = w_n

R

Finishing Time

Finishing time: bit-by-bit

Finishing time: pkt-by-pkt
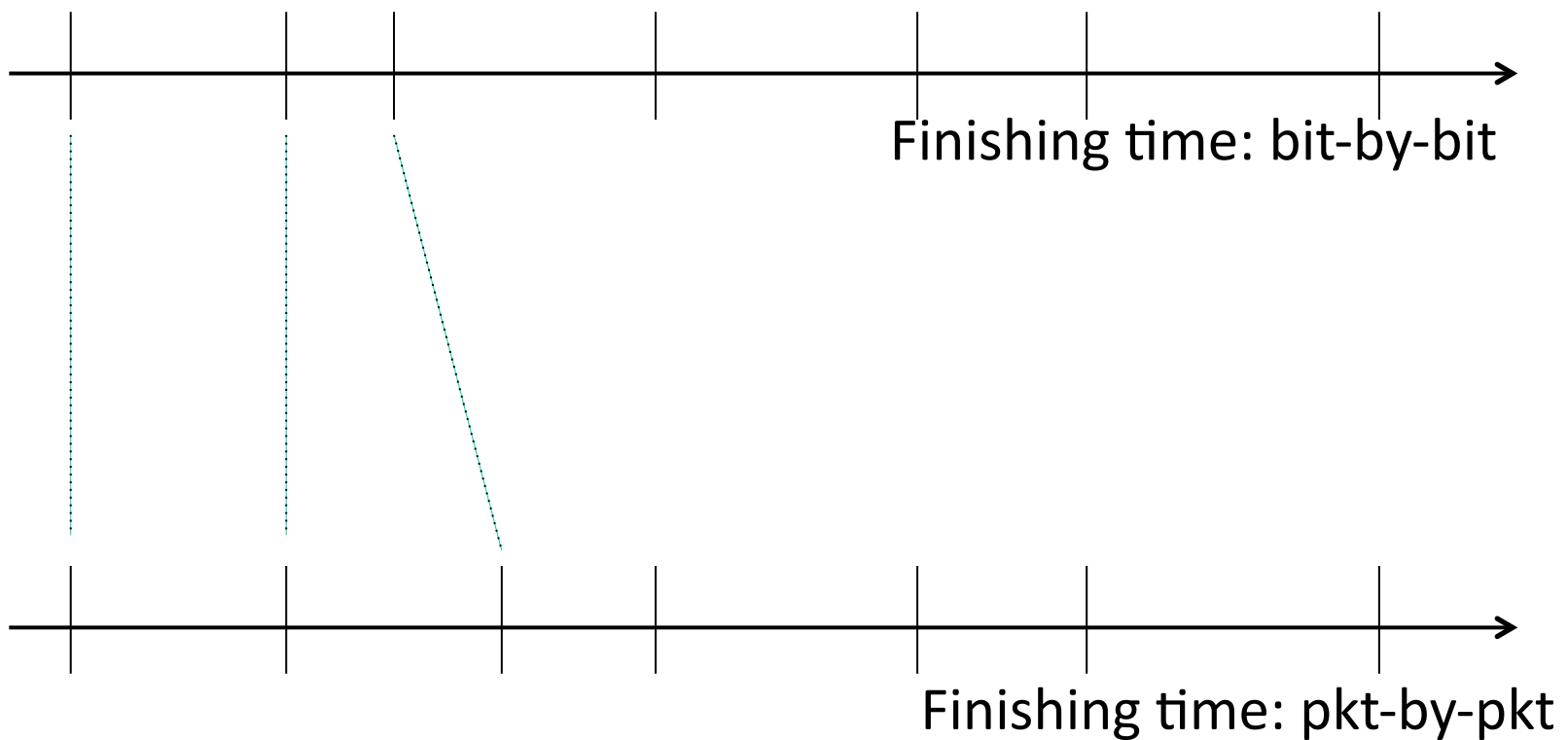
Summary

FIFO queues are a free for all: No priorities and no guaranteed rates.

Strict priorities: High priority traffic "sees" a network with no low priority traffic. Useful if we have limited amounts of high priority traffic.

Weighted Fair Queueing (WFQ) lets us give each flow a guaranteed service rate, by scheduling them in order of their bit-by-bit finishing times.