Announcing 1.1.1.1: the fastest, privacy-first consumer DNS service

01 Apr 2018 by Matthew Prince.

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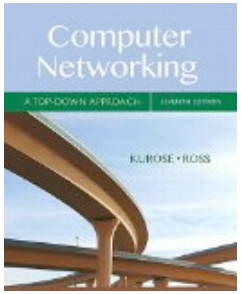
Cloudflare's mission is to help build a better Internet. We're excited today to take another step toward that mission with the launch of 1.1.1.1 — the Internet's fastest, privacy-first consumer DNS service. This post will talk a little about what that is and a lot about why we decided to do it. (If you're interested in the technical details on how we built the service, check out Ólafur Guðmundsson's accompanying post.)

Quick Primer On DNS

DNS is the directory of the Internet. Whenever you click on a link, send an email, open a mobile app, often one of the first things that has to happen is your device needs to look up

Link: https://blog.cloudflare.com/announcing-1111/

COMP 375: Lecture 25



- **News & Notes:**
  - Quiz #6 in class Friday
  - Project #4 due Monday, April 16
- **Reading (Fri, Apr. 6)**
  - Sections 4.3.{3-5}

Sections 3.6 – 3.7

CONGESTION CONTROL

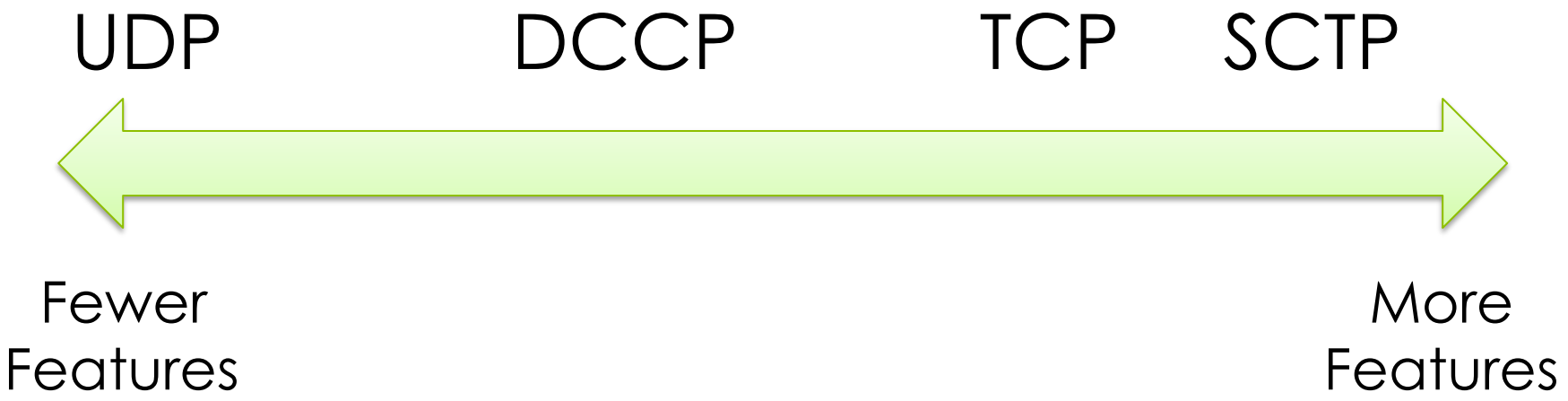
TCP offers fairness: No one connection will be able to use all bandwidth.

- *How does it achieve this?*

Since TCP is fair, does this mean we no longer have to worry about bandwidth hogging?

A.	**Yes**!
B.	**No**, because of UDP.
C.	**No**, because of multiple TCP connections.
D.	**No**, because both B and C.

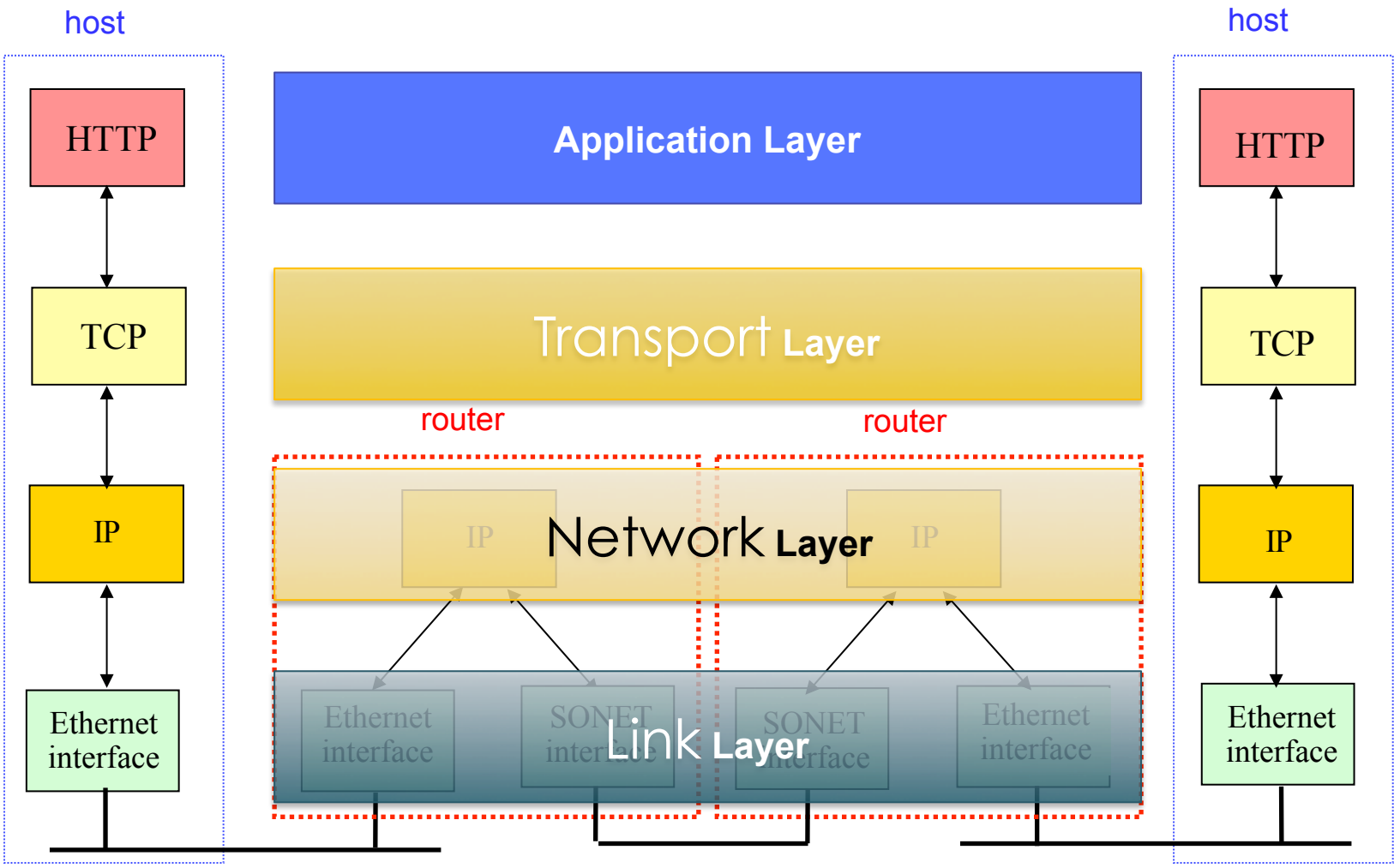
Beside UDP and TCP, there are two other standardized transport layer protocols.



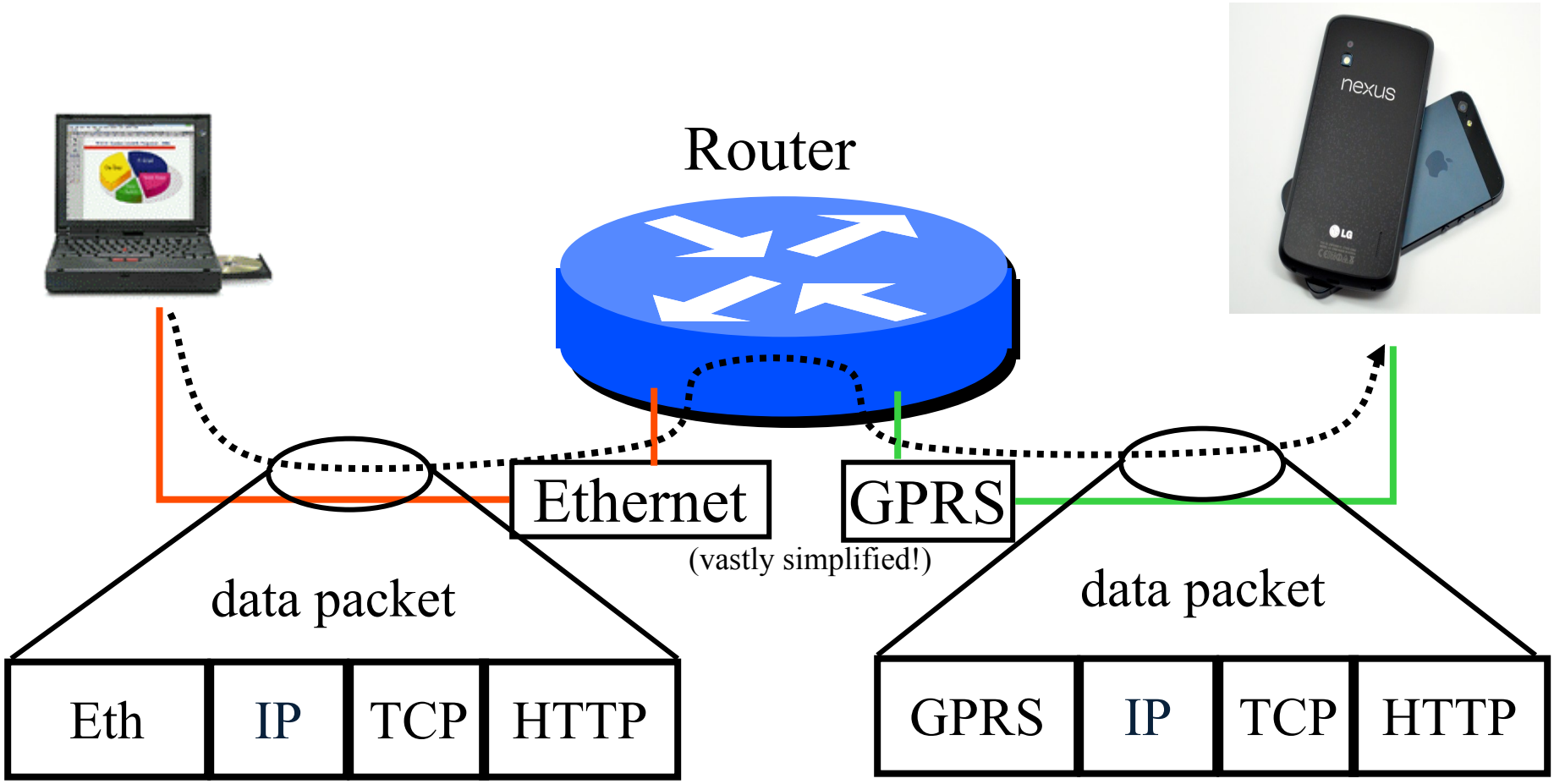
Section 4.1

NETWORK LAYER OVERVIEW

TCP/IP Protocol Stack

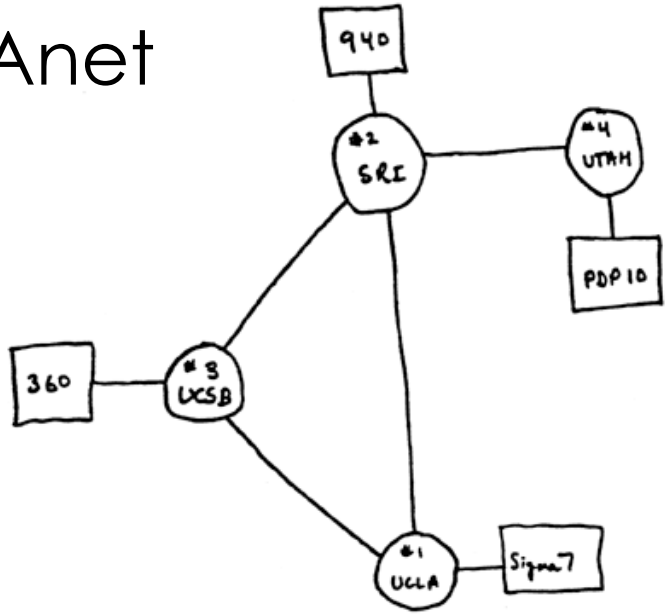


At the network layer, routers take in link layer data and forward it.



Some background…

- 1968: ARPAnet



- Mid 1970's: New networks emerge
  - SATNet, Packet Radio, Ethernet
- *How do we connect these networks?*

Cerf & Kahn's 1974 paper laid the foundations for the modern Internet.

- The **Internet** is…
  - A set of *routers*…
  - … *forwarding* packets from source to destination …
  - … using a single protocol (*IP*).

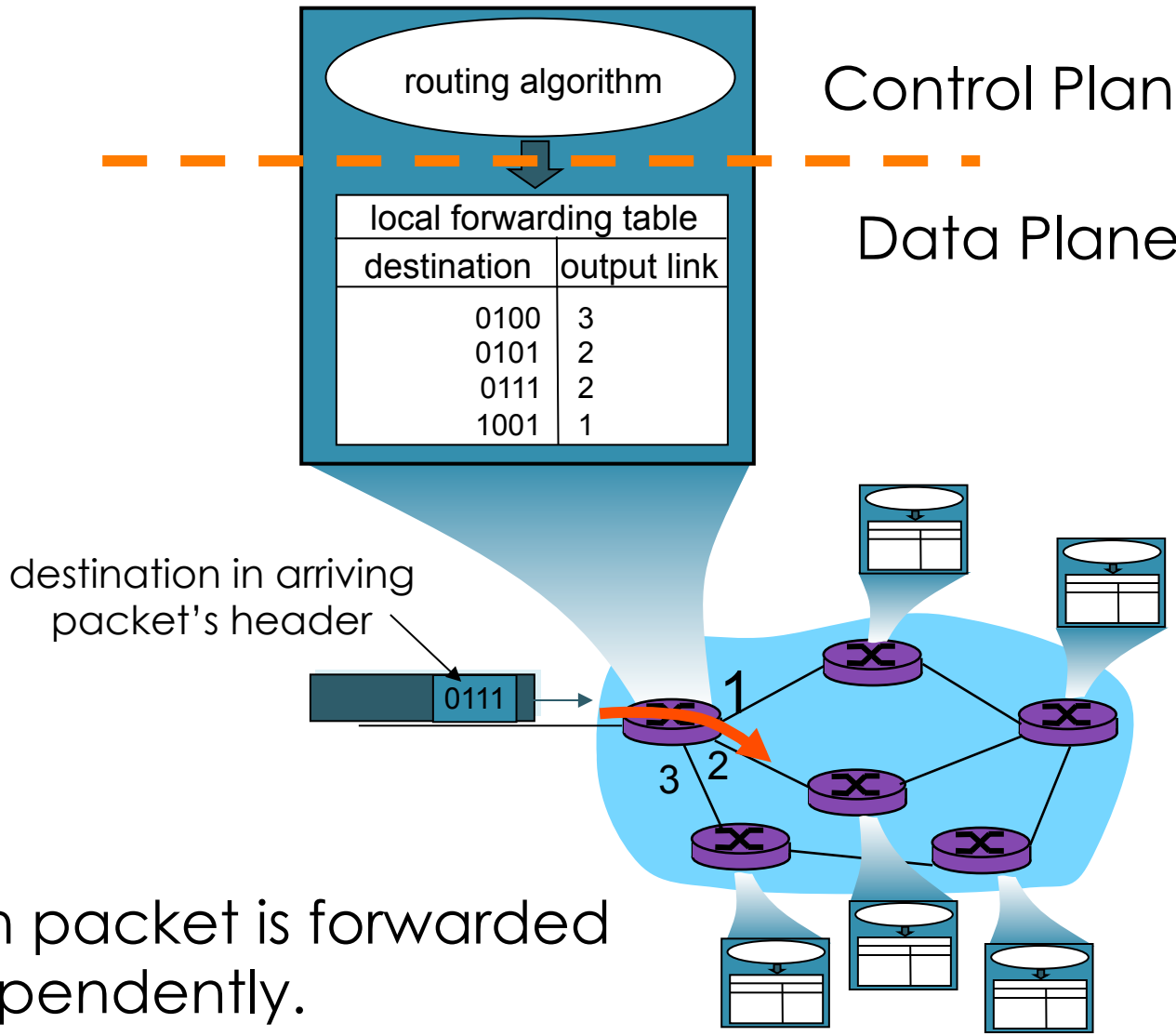
The network layer has two core functions: forwarding and routing.

What is the difference between forwarding and routing?

At what point should a router perform *routing*? What about *forwarding*?

A.	Do both when a packet arrives.
B.	Route in advance, forward when a packet arrives.
C.	Forward in advance, route when a packet arrives.
D.	Do both in advance.

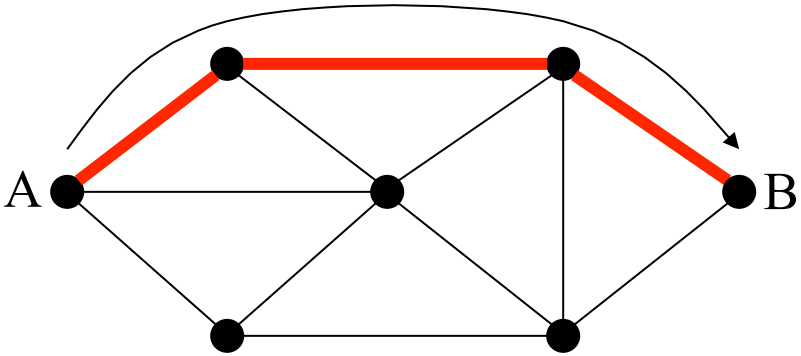
Routing happens in the **control plane**, while forwarding happens in the **data plane**.



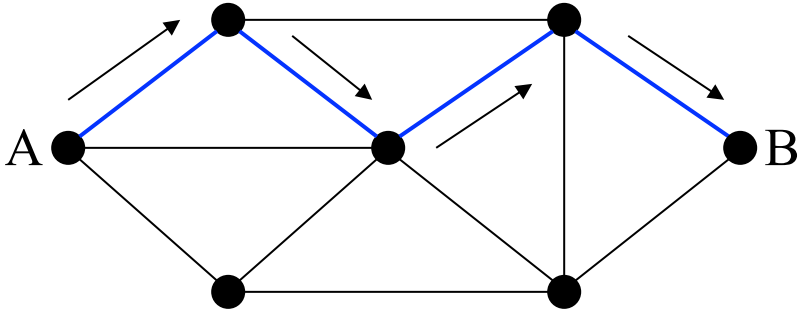
Each packet is forwarded independently.

Does it have to be that way?

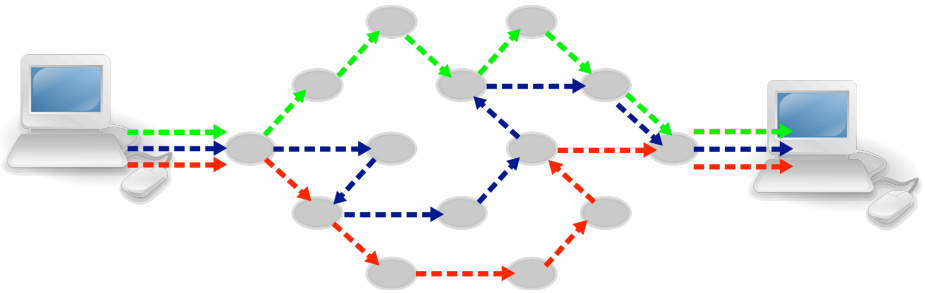
Circuit- and Packet Switching are two ways to move data between hosts.



Circuit Switching



Packet Switching



Which of the following is *generally* **true** of packet vs. circuit switching?

A.	Packet switching has less variance in performance.
B.	Circuit switching is less reliable.
C.	Circuit switching has higher link utilization.
D.	More than one of the above.
E.	None of the above.