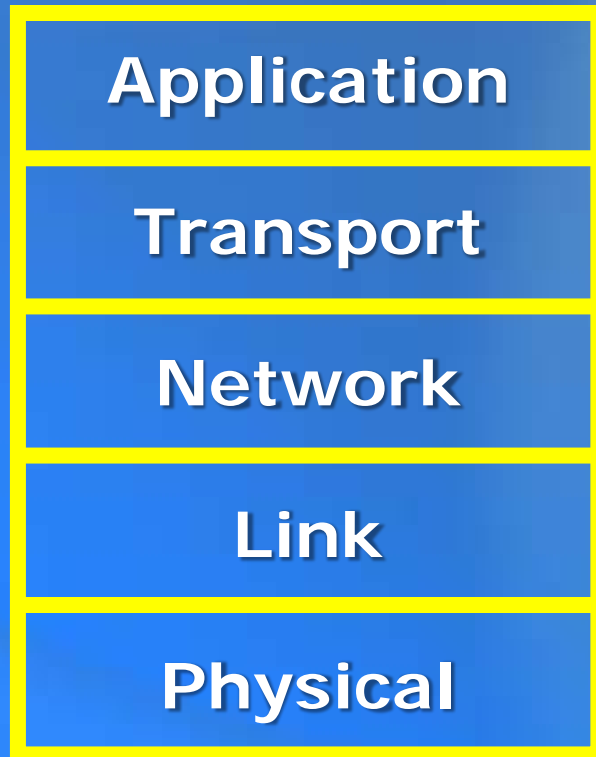


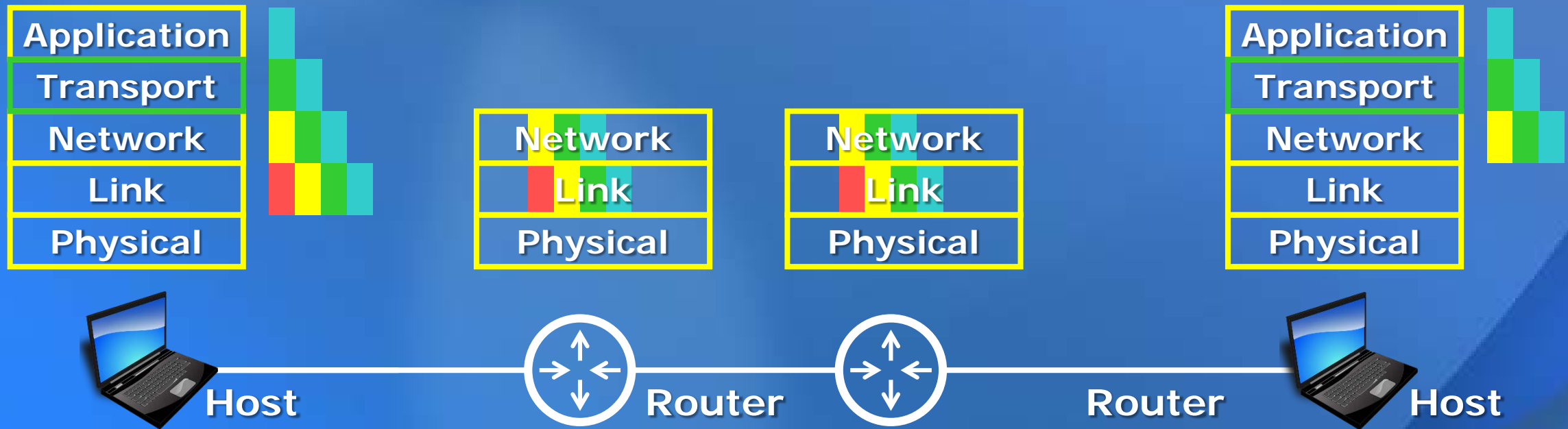
The Internet Hourglass

Internet protocol stack



- Application layer runs applications, e.g. email, web browser, messaging
- Transport layer provides for logical communication between applications
- Network layer delivers packets from source to destination over a network
- Link layer handles data transfer from between adjacent nodes
- Physical layer deals with properties of medium (e.g. wired/wireless)

Layer Communication



The end-to-end layers (i.e., transport and application) are implemented only at hosts

Network, link and physical layers are implemented everywhere.

The Internet Hourglass

Many Applications

Web

FTP

Mail

News

Video

Audio

Video Calling

Few Transport
Protocols

TCP

UDP

IP One Network Protocol

Ethernet

802.11

Power lines

ATM

Optical

Satellite

Many Link Technologies