

What holds the Internet together?

The physical systems involved in the Internet are interlinked with the help of intermediate systems that take on the task of packet switching between networks

There are intermediate systems with different functions:

- Repeater
- Hub
- Bridge (Switch)
- Router
- Gateway

According to their function each of these systems is associated with a specific protocol layer of the TCP/IP protocol stack

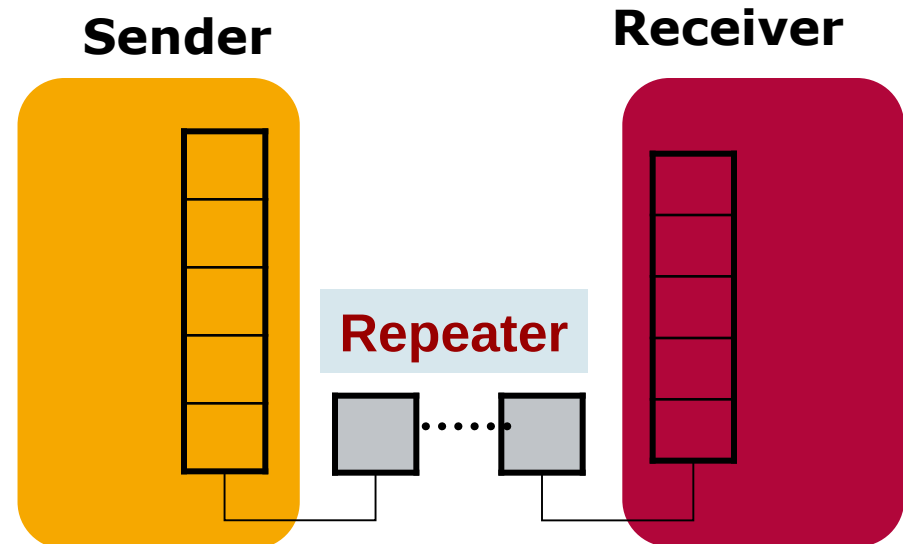
Repeater

2

Repeaters work at the lowest layer (physical layer), and are therefore “invisible” to the higher layers

- Serve purely in the amplification of signals to bridge greater distances
- Have no “built-in” intelligence

4	Application
3	TCP (Transport)
2	IP (Internet)
1	Network access (LAN)
0	Hardware



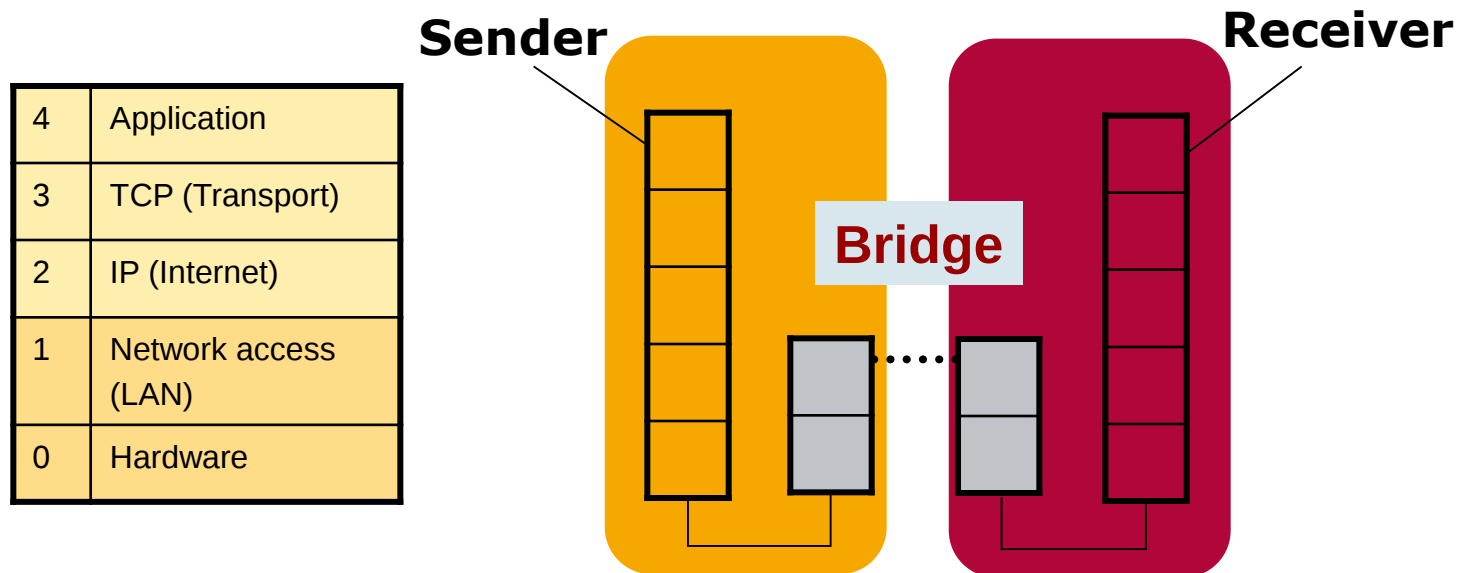
Bridge and Switch

3

Bridges connect two LAN segments

Switches connect individual computers to a LAN
(or multiple segments)

- Allow LAN expansion with **intelligent traffic management**
- Local traffic stays local, is not forwarded over a bridge

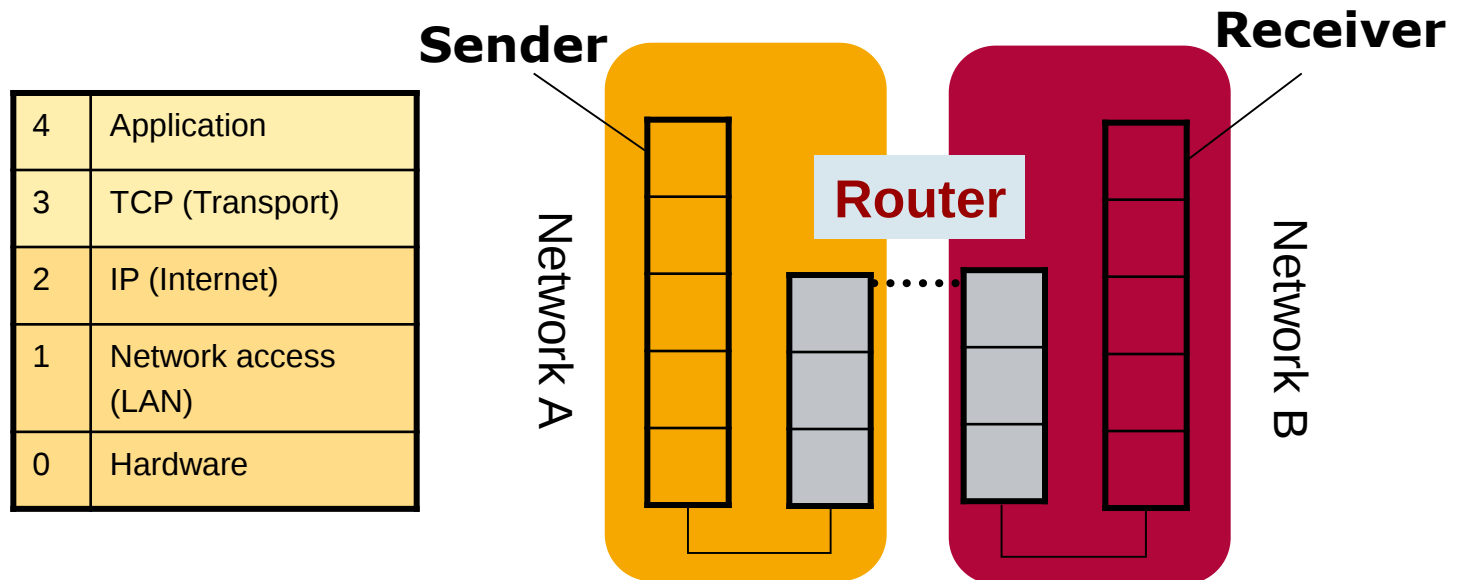


Router

4

Routers connect two independent networks to an Internet

- Subnetworks are separated logically at layer 2
- The network topology and technology must be known to the router in order to be able to forward data packets efficiently



Gateway

5

Gateways (more precisely: application level gateways) connect networks at the application level

- Allow communication between applications or components of a distributed application at different end systems
- Translate different application protocols to one another

