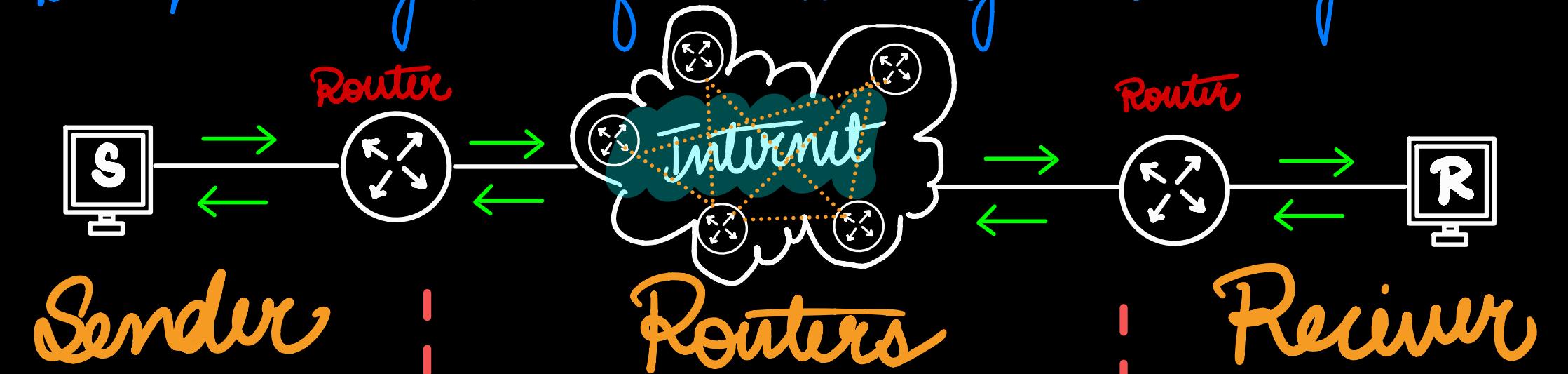


Network Layer

Transports segments from sending to receiving hosts



Sender

1. Encapsulates segments into datagrams, passed to link layer
2. The network layer will take a transport layer segment from UDP or TCP and Encapsulate the segment into IP Datagram.

Routers

1. Examines header from all IP Datagrams passing through it.
2. Moves datagrams from input ports to output ports to transfer datagrams along end-end path

Receiver

1. Delivers segments to Transport layer
2. The network layer receives the datagram checks the information like checksum and extracts the payload and de-multiplexes the segment up to appropriate upper level transport protocol UDP or TCP.

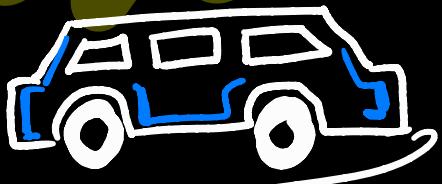
Local Hardware

Key Functions

moves packets from a router's input link (Take Nano Seconds)



Process of getting through single Interchange



Taking a Trip

Software (mostly)
Global
Routing (takes seconds)

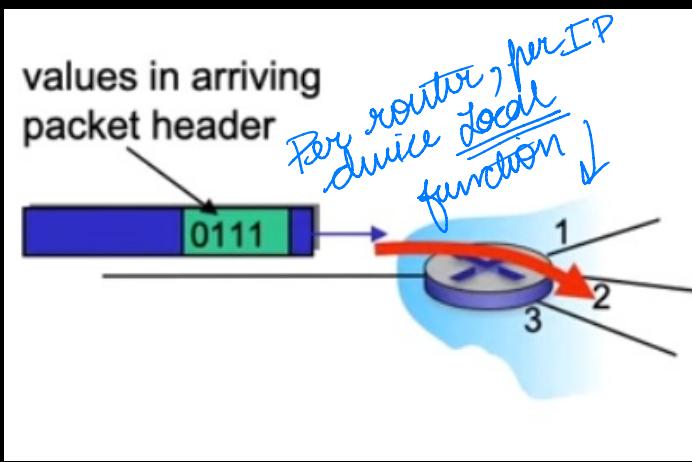
Determine route taken by packets from source to destination



Process of Planning trip from Source to Destination

Data Plane

- ★ Local, per router function
- ★ Determines how datagrams arriving on the router inner port are forwarded to router outer ports.

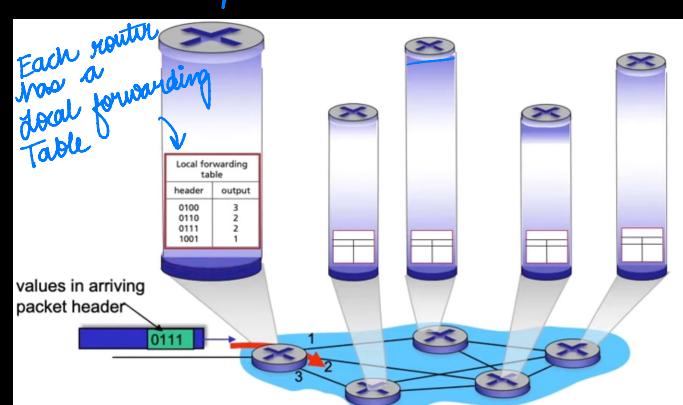


Control Plane

- ★ Network wide logic
- ★ Determines how datagram is routed among routers along end-end path from source host to destination host

Per-Router Control Plane

- Individual routing algorithms components in each and every router interact in the control plane.



Two Approaches

1. Traditional Routing Algorithms
 - Implemented in routers
2. Software-Defined Networking (SDN)
 - Implemented in (remote) servers

Software-Defined Networking

- Remote controlled computers, installs forwarding tables in routers
- Remote controllers installed in data centers

