

Data transfer between devices

Step-by-Step Process of First-Time Communication:
Let’s say A wants to connect with B for the first time.

A tries to find B’s IP using one of the methods above
If A knows the hostname, it queries DNS.If A and B have static IPs, A already knows it.If A is in a dynamic network, it asks the DHCP server.If A has no idea, it sends a broadcast request.

Once A gets B’s IP, it checks its ARP Table

If B’s MAC address is not in the ARP table, A sends an ARP Request:"Who has IP 192.168.1.20?"B responds with its MAC address

B replies:"I have that IP! My MAC is 00:1A:2B:3C:4D:5E!"A stores this in its ARP Table.A sends the actual data to B using MAC address.

The switch forwards the packet only to B.
◦ Example of How A Gets B’s IP in a Local NetworkImagine A wants to connect to B, but it doesn’t know B’s IP.

Using ARP and Broadcast1🖥️ A sends an ARP request:Who has 192.168.1.20? Tell me your MAC address!

2🖥️ B replies:I have that IP! My MAC address is 00:1A:2B:3C:4D:5E

3🖥️ A now knows B’s IP and MAC address. 4🖥️ A sends data to B.

◦ Summary Table:		Method	When Used	How A Gets
B’s IP				
Static IP		Fixed IP networks	Already known	DNS Query
Hostname-based		A queries DNS	DHCP Server	Dynamic networks
routerBroadcast Request		Local networks	A asks all devices	A asks the

First-Time Communication Process

