

Why IPv6

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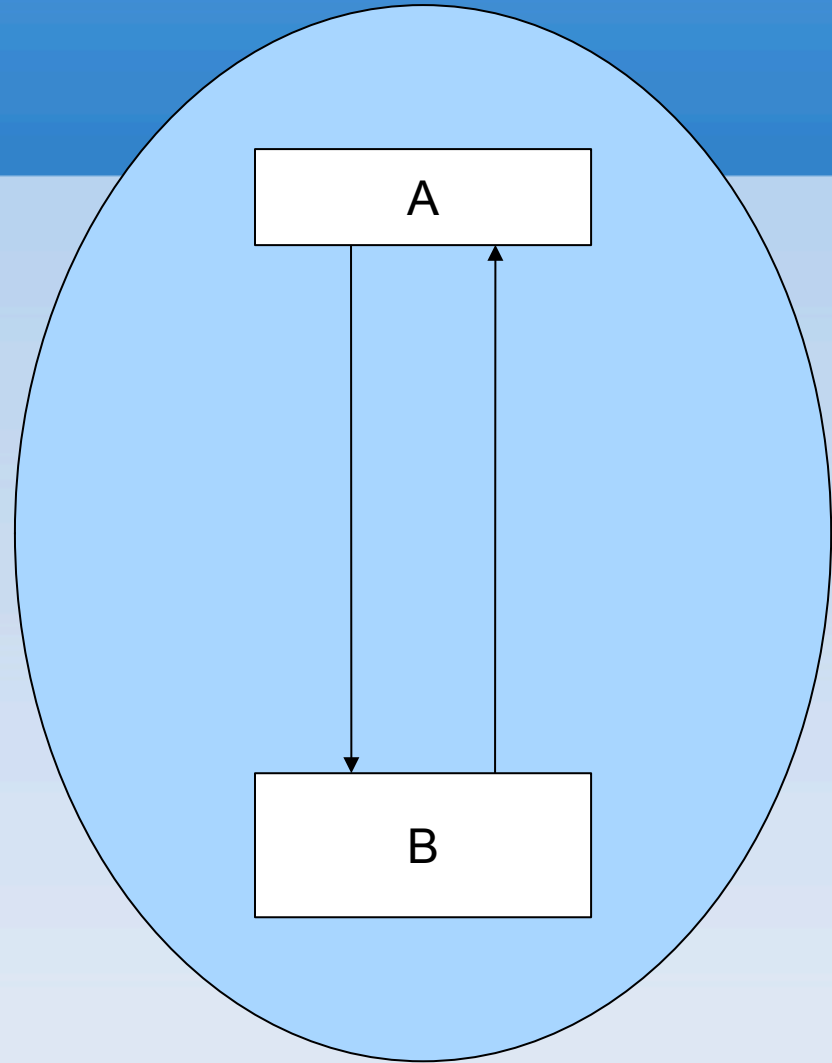
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Four Billion is a Small Number

- IPv4 has 32-bit addresses
 - 32 bits means 4 billion addresses
 - In practice, you MAY get to 1/10 of that
- We have 6 billion humans
- We have 3 billion cellphones
- Is this a problem?

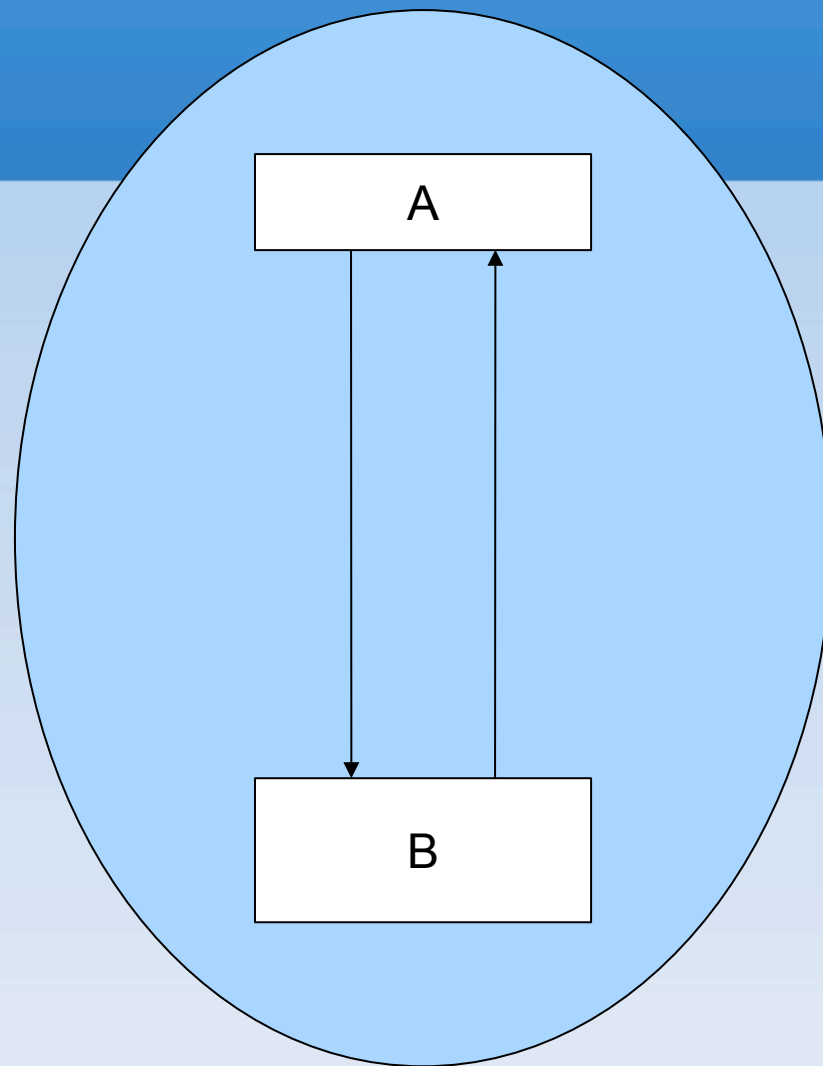
Connecting two devices

- Device A must identify device B
- There must be some way to get from the identity to the communications path
- Device B must be able to talk back



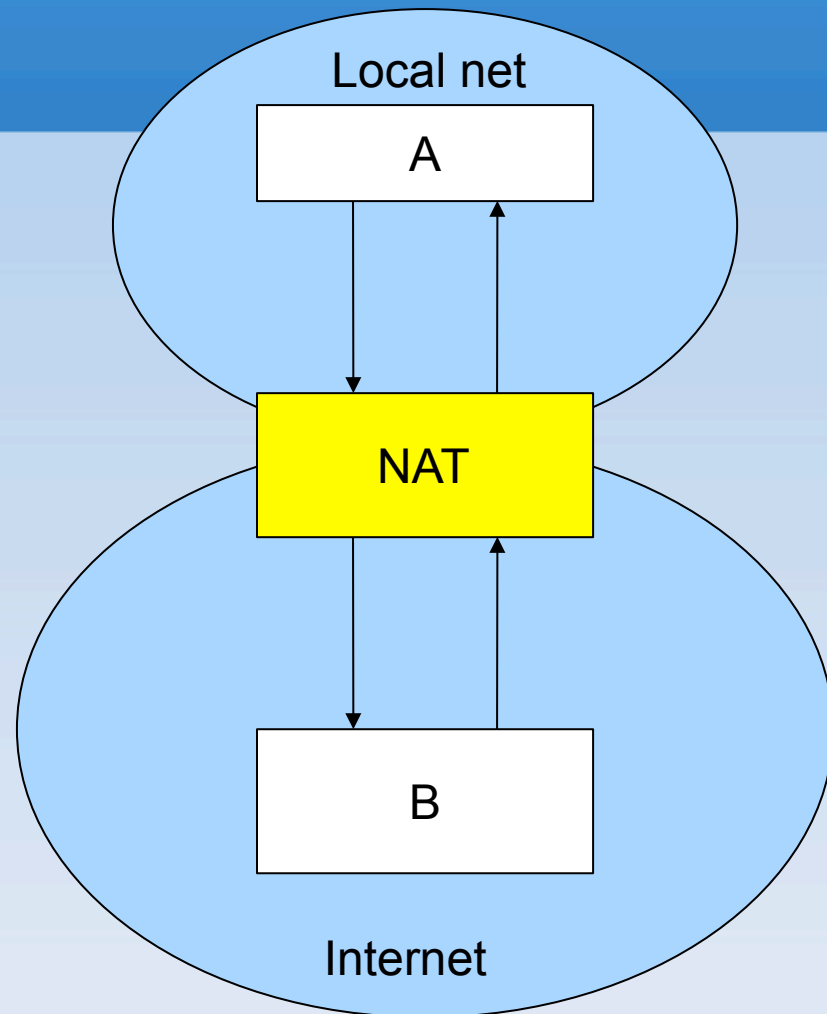
Connecting in IPv4 (old style)

- Device A has an address
- Device B has an address
- A sends packets to B
- B replies by sending packets to A
- What happens if addresses aren't unique?



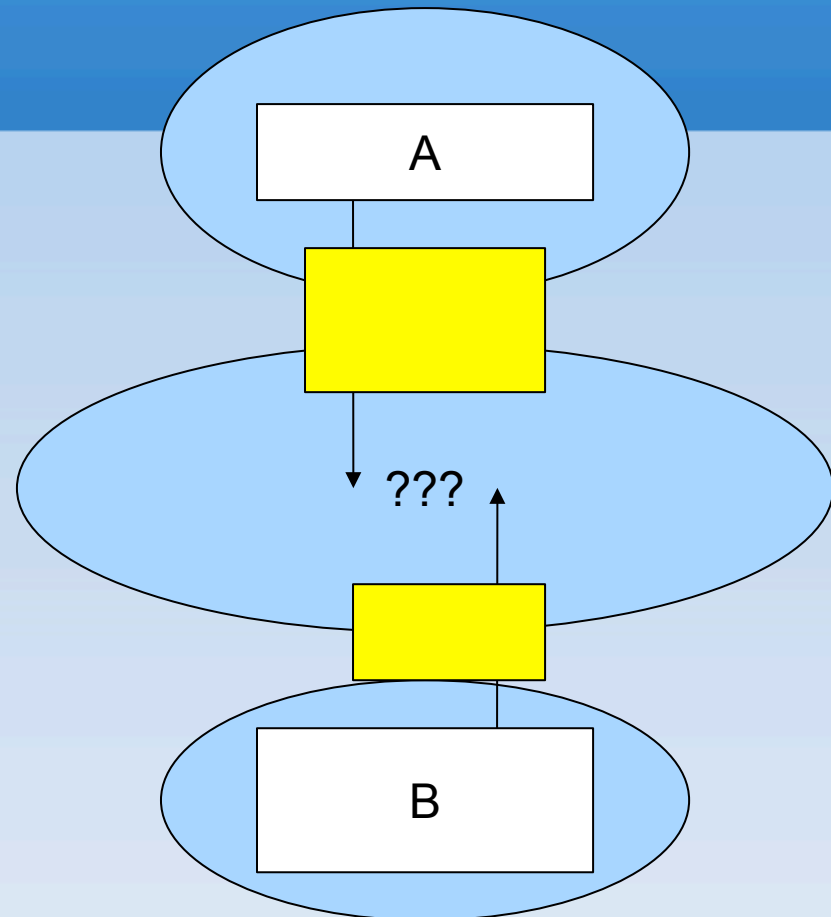
Connecting with NATs

- A is within a local net
 - Local address
- B is on the Internet
 - Global address
- A sends to NAT that sends to B
- NAT has an address that B can send to
- NAT knows how to forward responses back to A
- It works – sort of



Problems

- A is within a local net
- B is within a local net
- They can't reach each other!
- Lots of technical workarounds
- None of them pleasant



Connecting with IPv6

- Just like in the old days....
- Issues with connecting to IPv4
- Issues with deployment
- Simplicity is the key!

