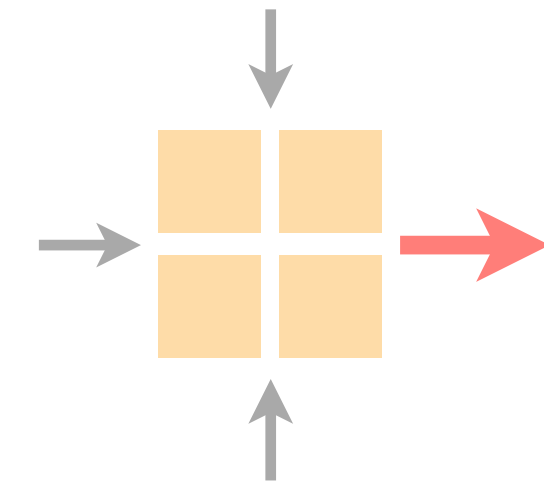


Communication Networks

Spring 2025



Slides adapted from Lukas Rölli



Pietro Ronchetti

comm-net.ethz.ch

ETH Zürich

20 Mar 2025

Communication Networks

Exercise 5

Routing Project

Important lecture topics

Introduction to this week's exercise

Time to solve the exercise

Routing Project

TA Bot

Pietro's TA Bot 🍏🍏🍏🍏🍏🍏🍏🍏🍏🍏

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[Disclaimer](#)

Bonjour, Pietro!

I am René Magritte, your personal teaching assistant for Communication Networks.

I'll require a green apple for each question you ask. Do not fret however, as new ones will grow every 3 minutes.

You: What should our students do?

René:

They should always double-check my answers with the course information and other reliable sources

I'd love for them to give us feedback on this experimental feature!

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NAT

Network Address Translation

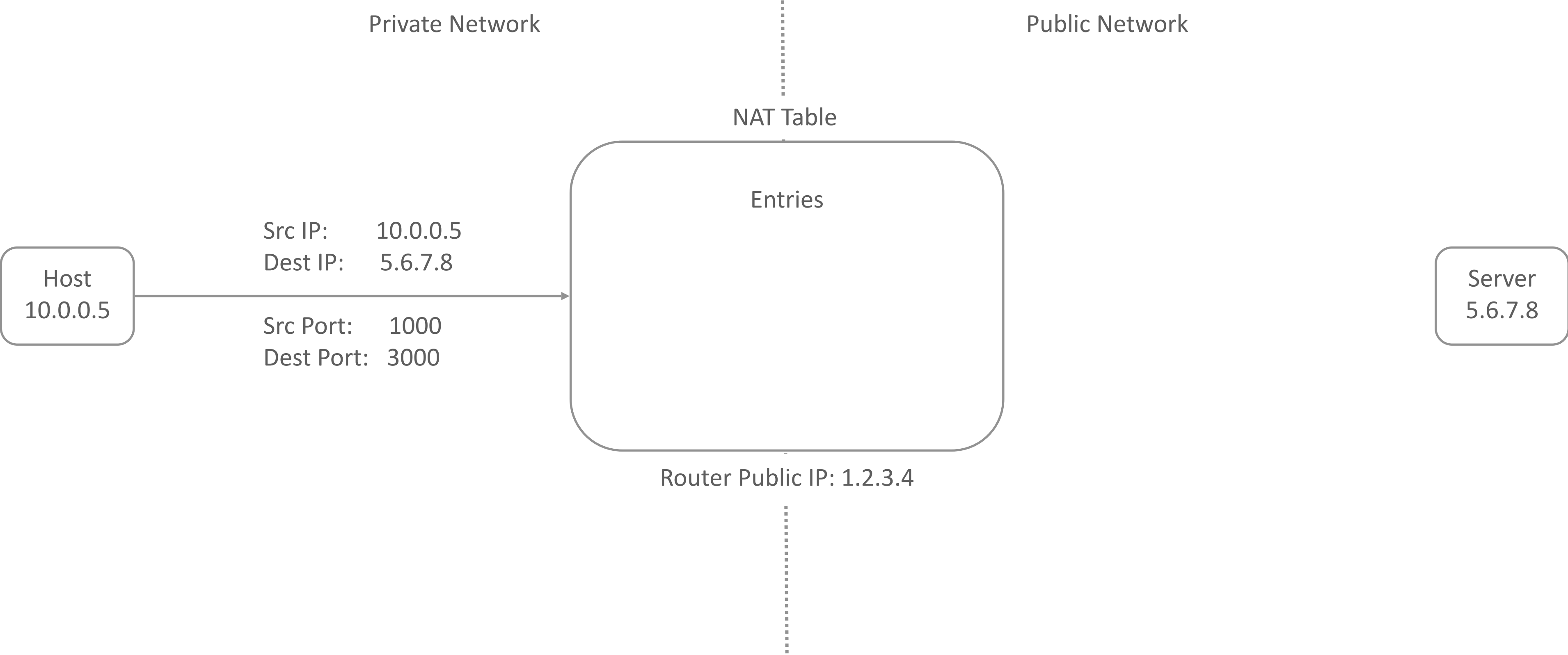
NAT allows one public IP to be shared by multiple hosts



Not physical ports but transport layer ports

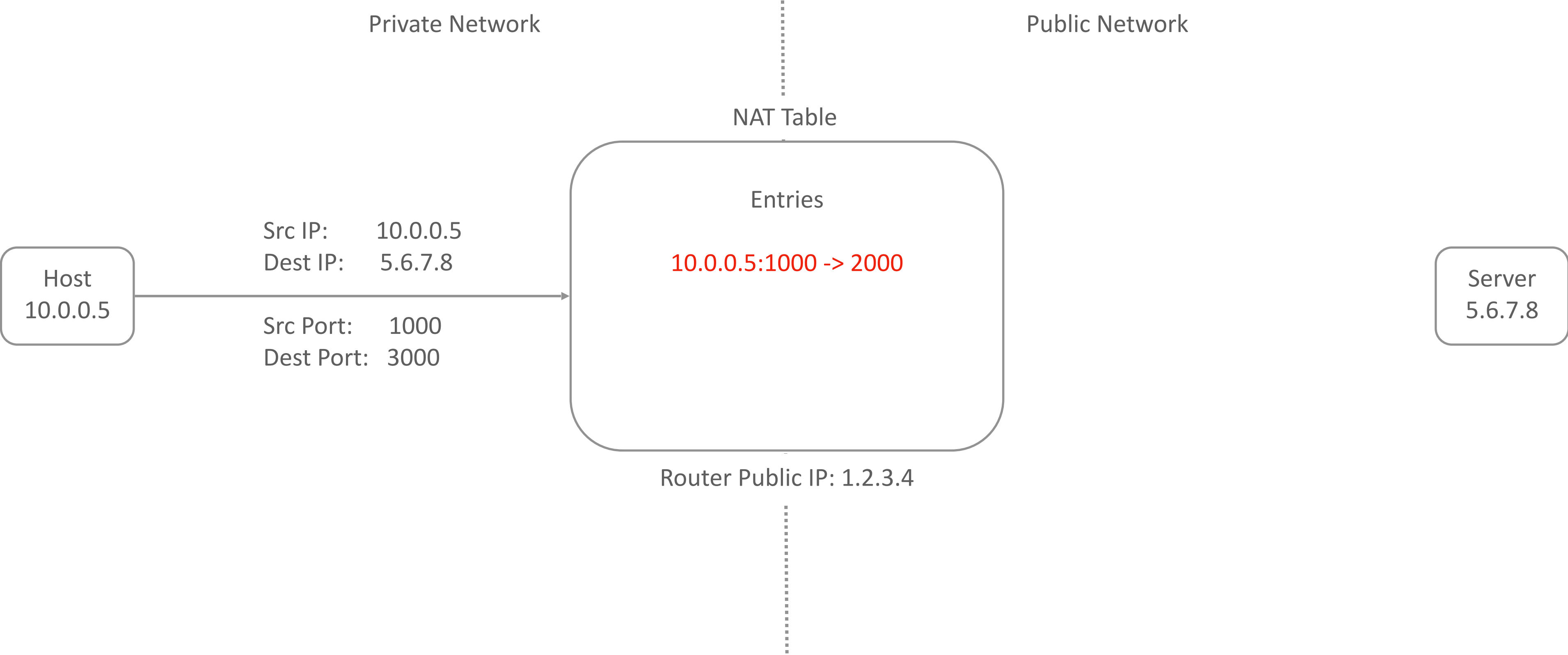
NAT

Network Address Translation



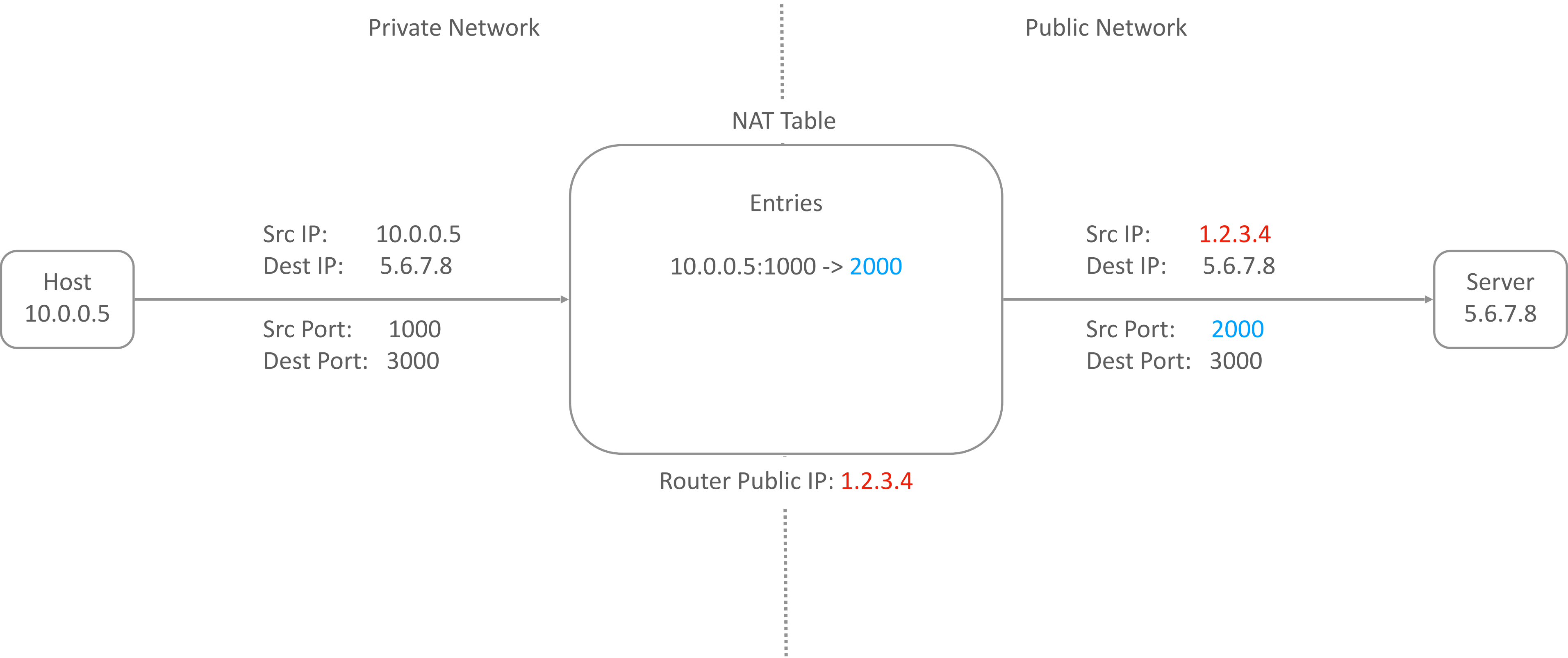
NAT

Network Address Translation



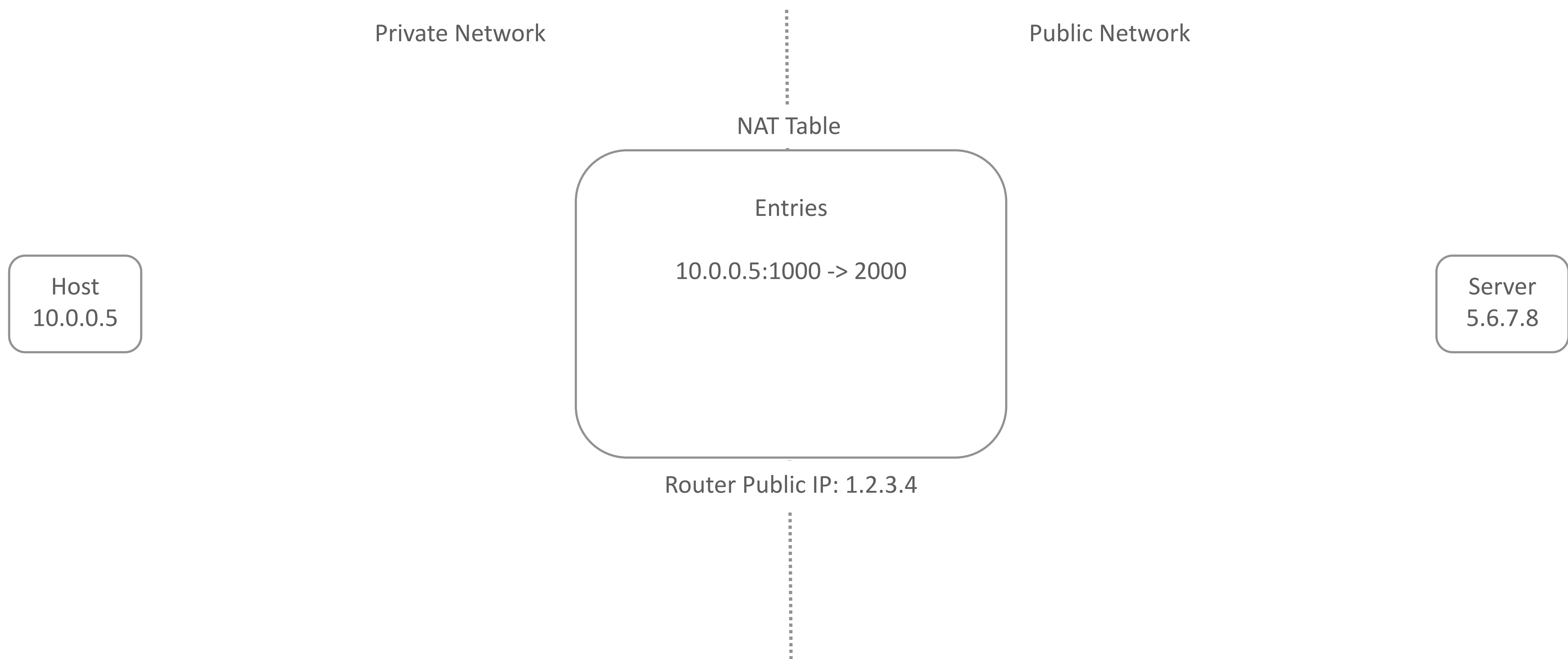
NAT

Network Address Translation



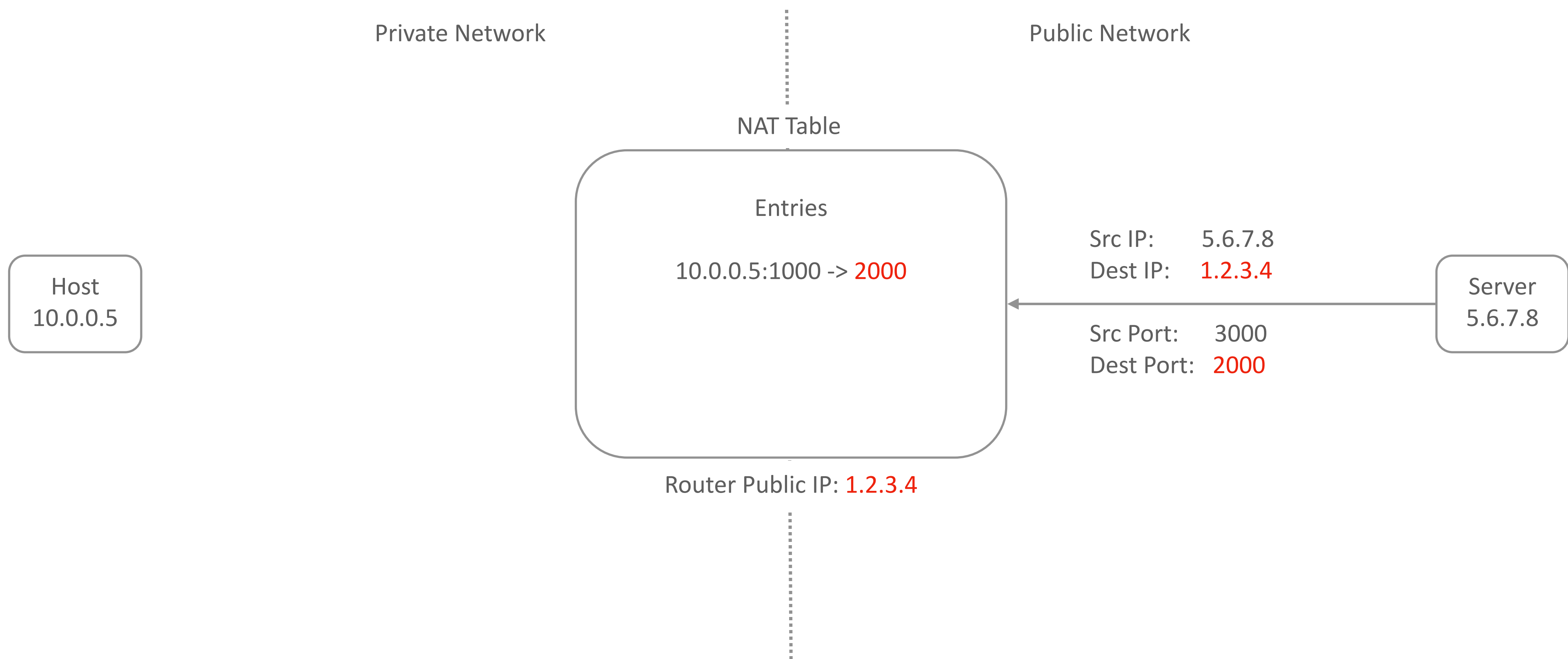
NAT

Network Address Translation



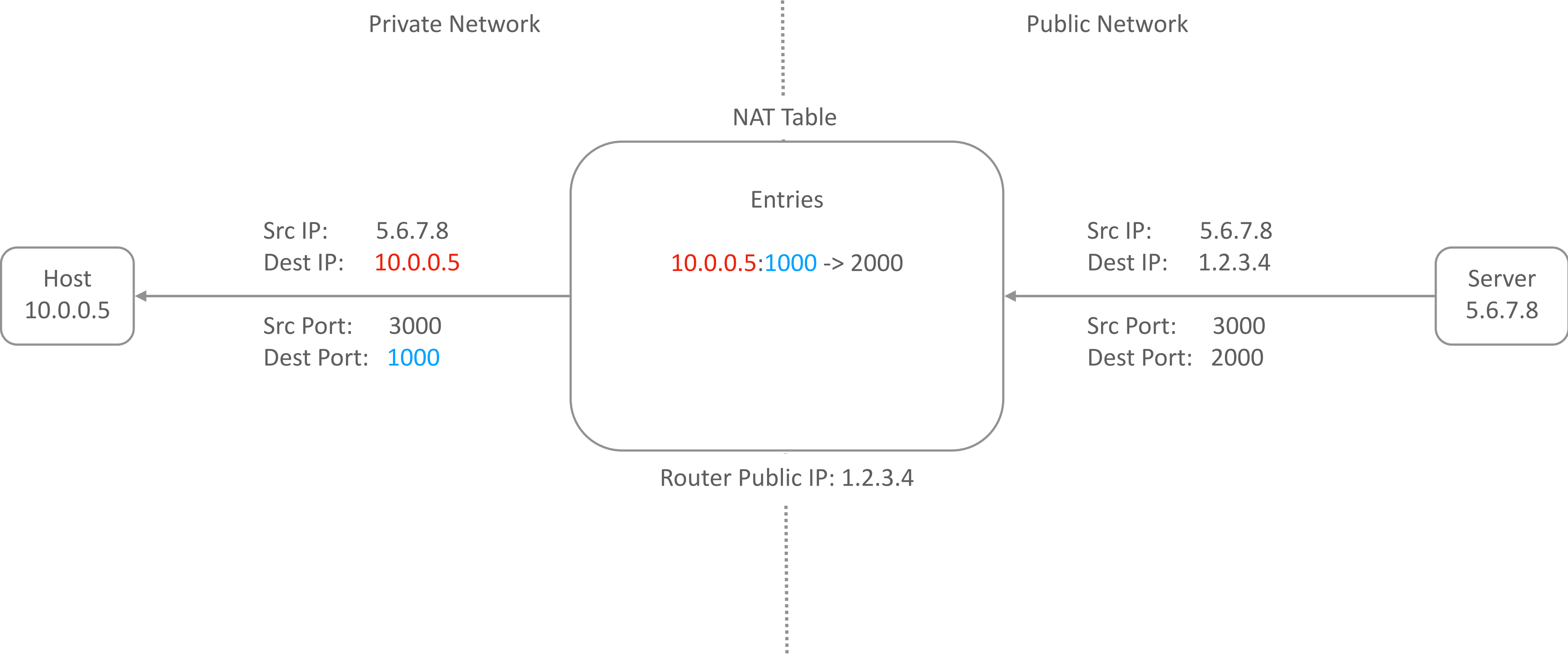
NAT

Network Address Translation



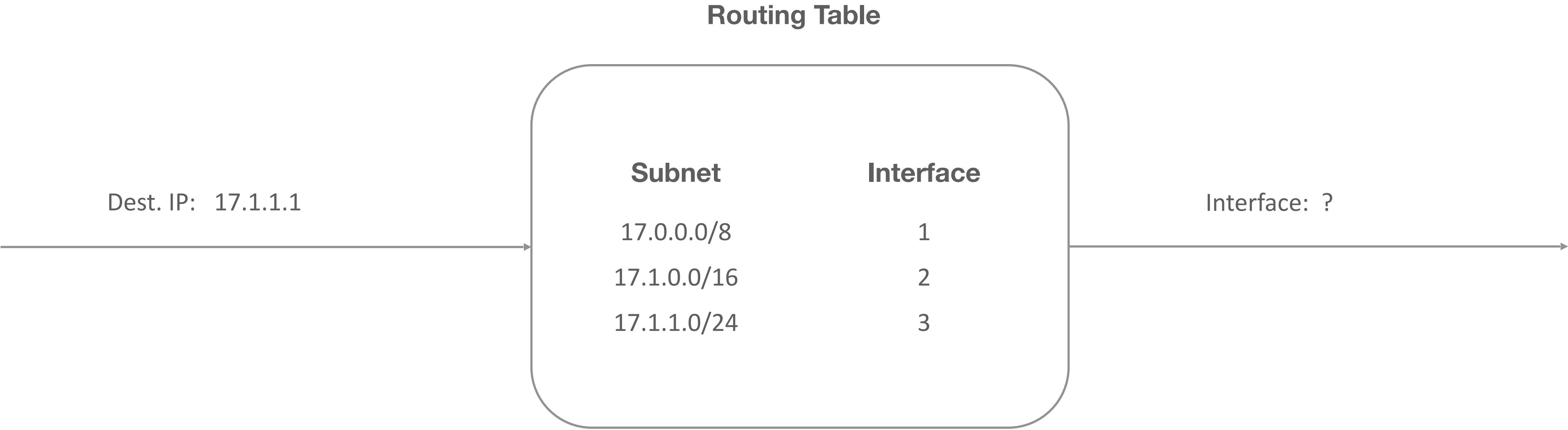
NAT

Network Address Translation



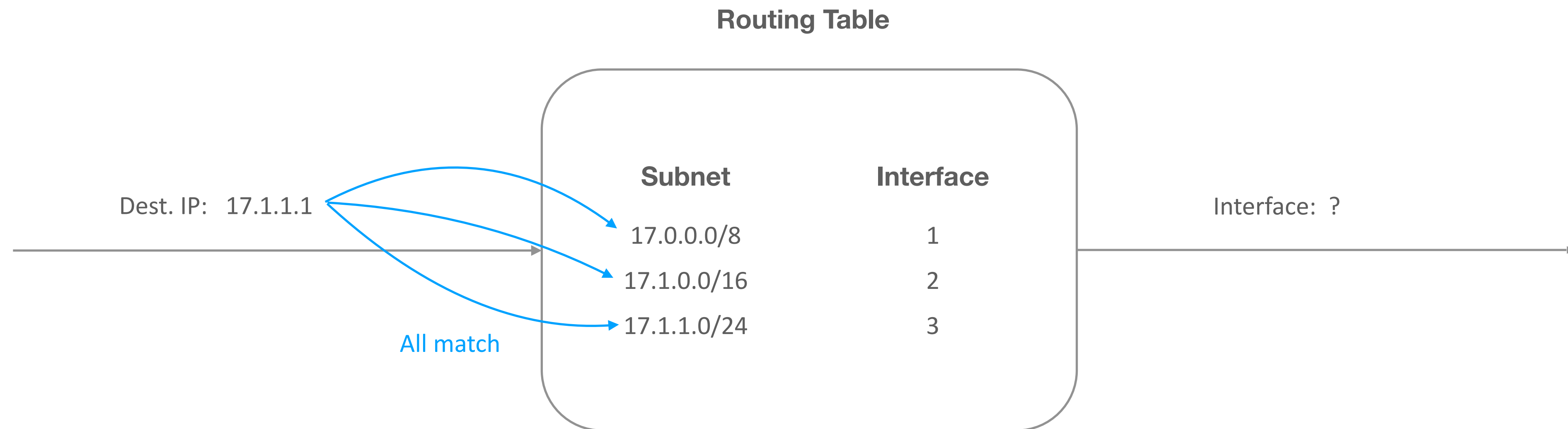
Longest Prefix Matching

IP routers use longest prefix matching to decide where to forward a packet



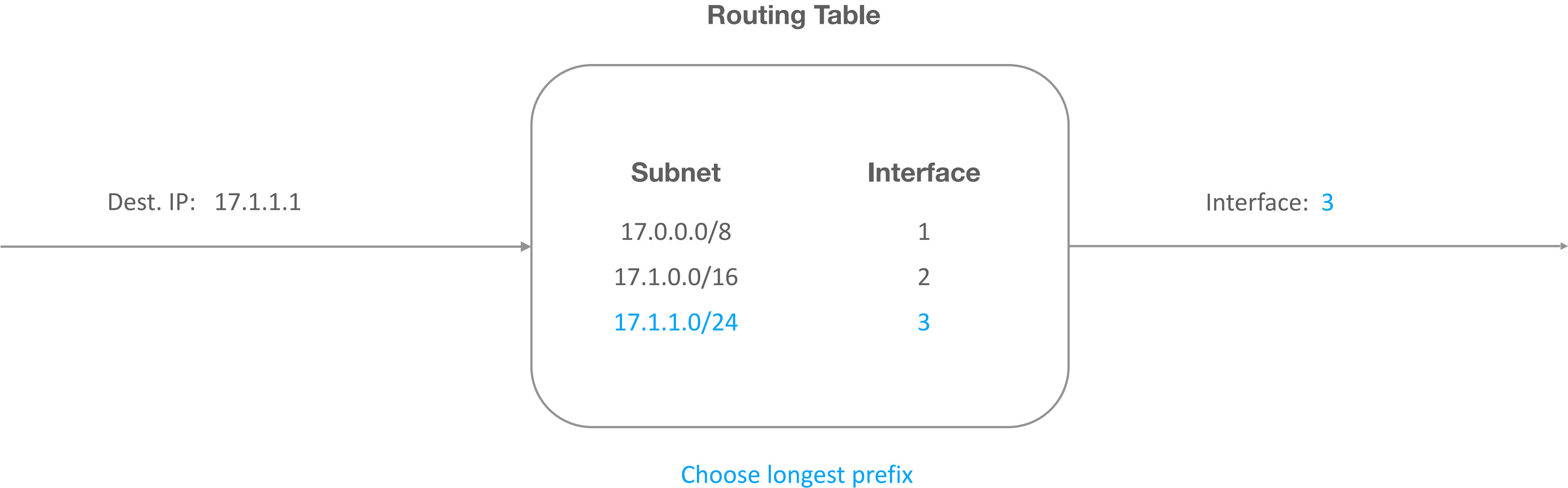
Longest Prefix Matching

IP routers use longest prefix matching to decide where to forward a packet



Longest Prefix Matching

IP routers use longest prefix matching to decide where to forward a packet



Communication Networks

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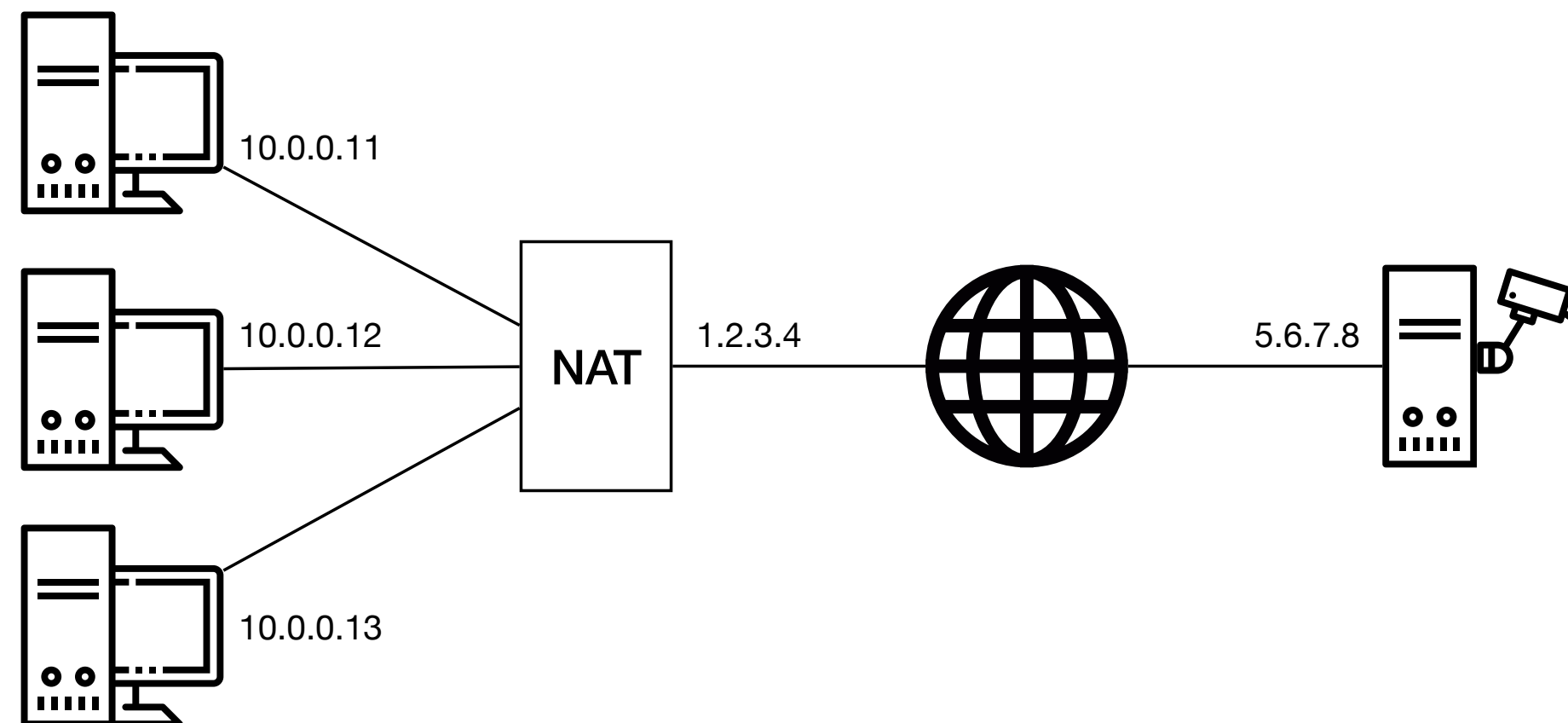
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Task 5.1

Network Address Translation

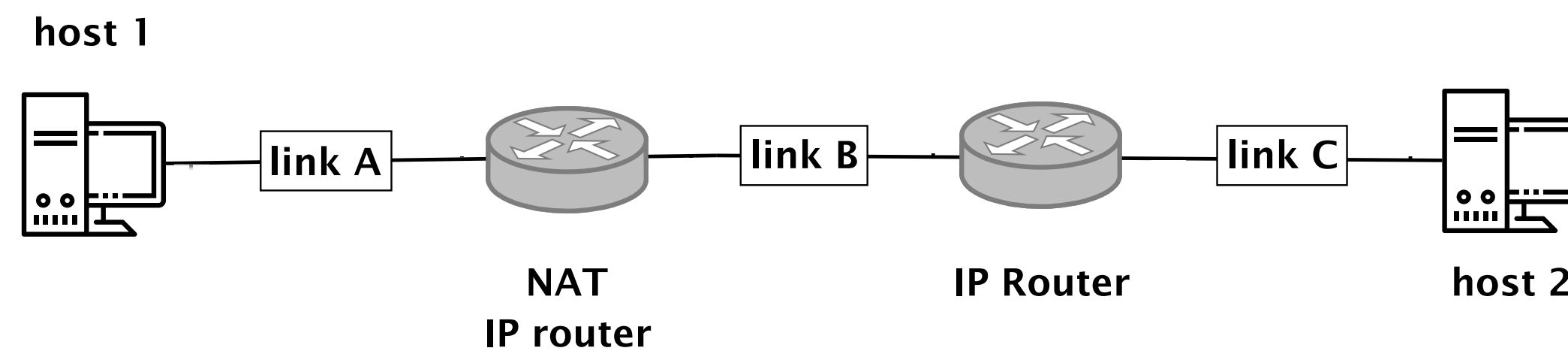


Apply the concept of NAT

What happens when we send a packet from the private network towards the internet?

Task 5.2

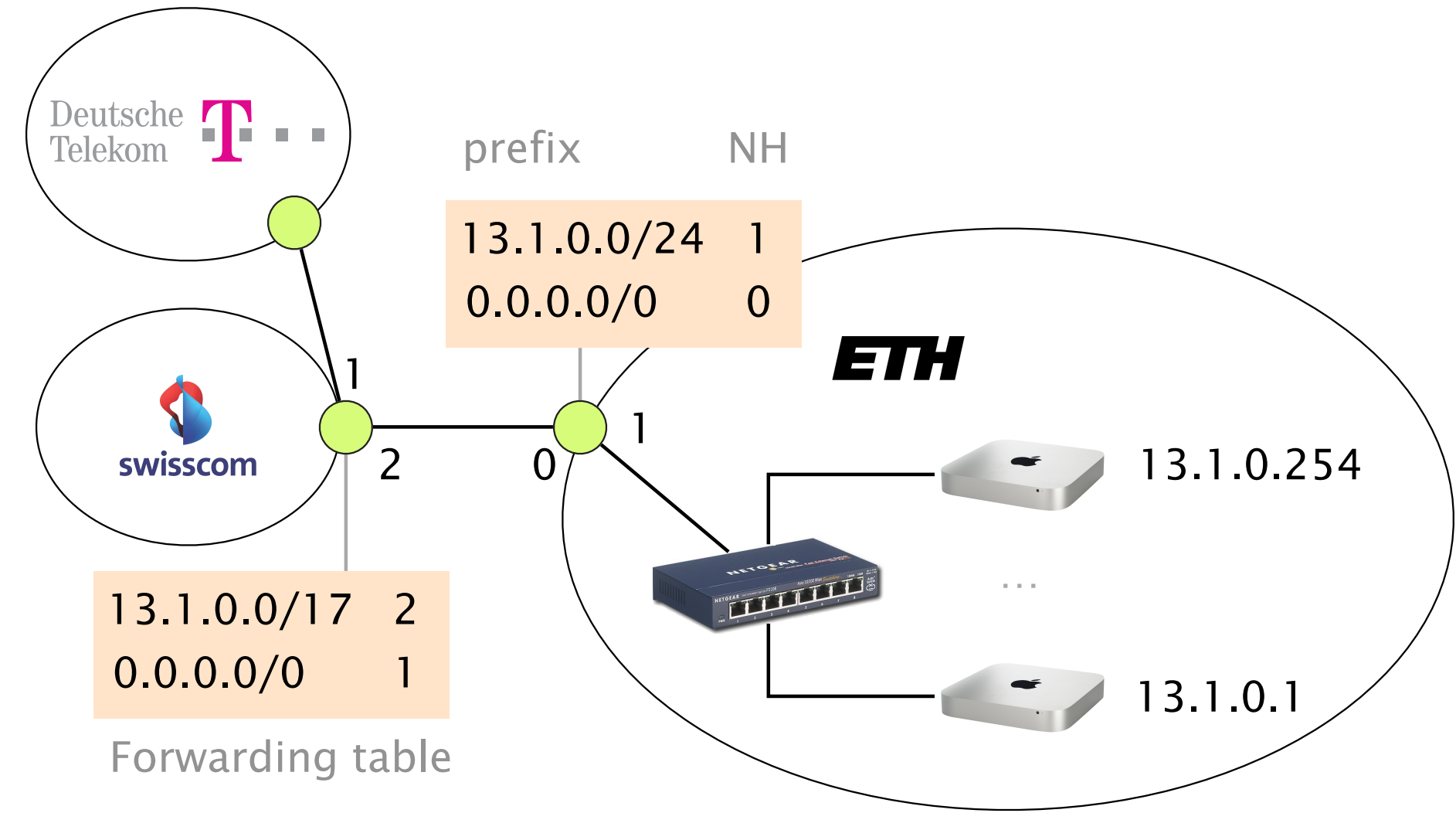
Network Address Translation



What information is needed for routing?

Task 5.3

Forwarding



Number of IPs available for devices

Longest prefix matching

Task 5.4

Forwarding Tables

Make sure the tables stay exactly the same

If an IP wasn't in the table before it shouldn't be in the table after cleaning up the entries

Communication Networks

Exercise 5

Routing Project

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Time to solve the exercise