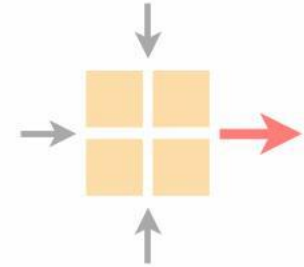


Communication Networks

Spring 2024



Lukas Röllin

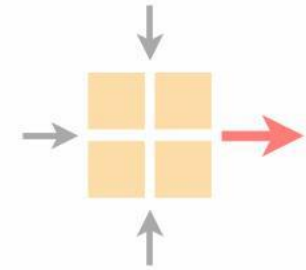
<https://comm-net.ethz.ch/>

ETH Zürich

March 28, 2024

Communication Networks

Exercise 4



Important lecture topics

Introduction to this week's exercise

Time to solve the exercise

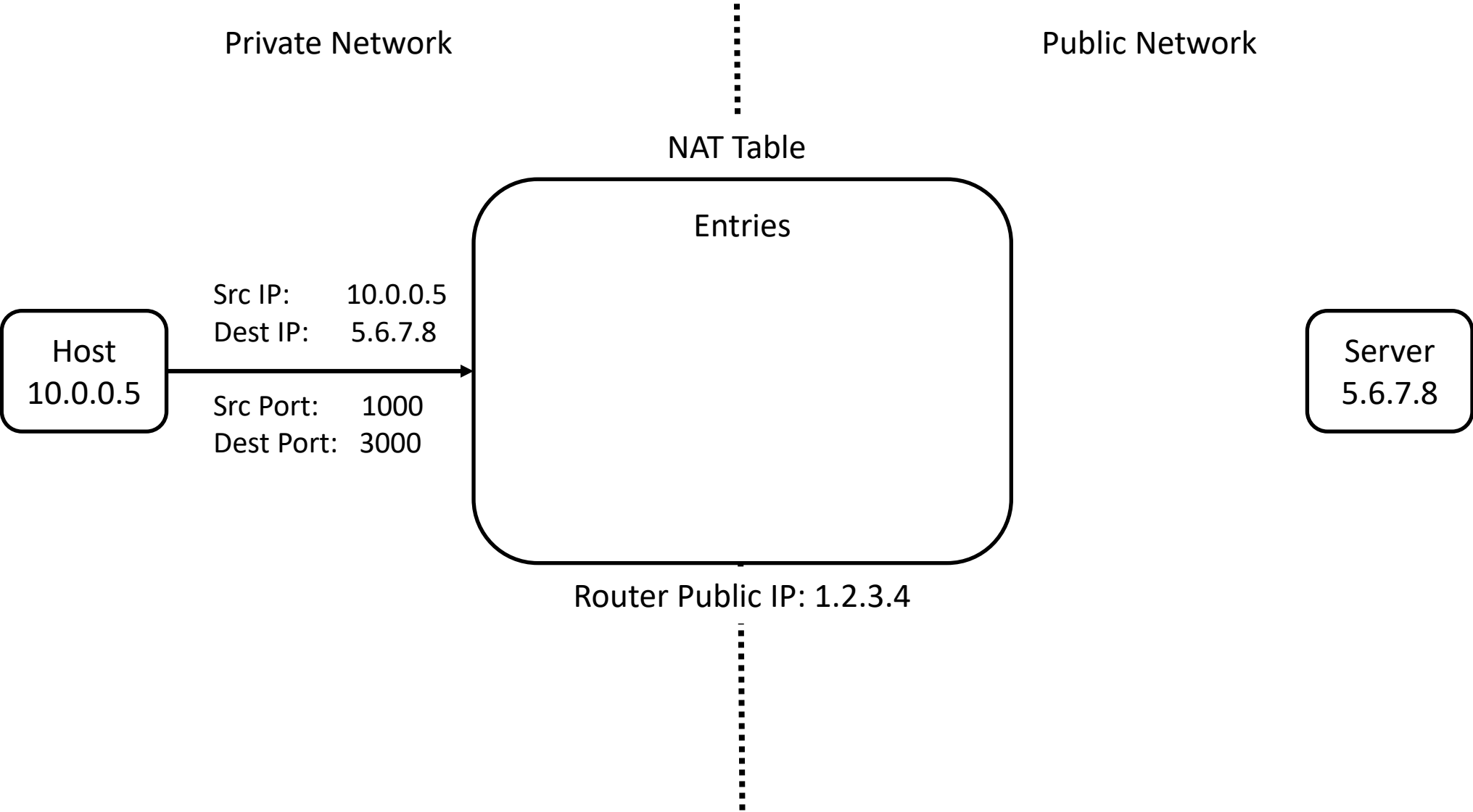
NAT (Network address translation)

NAT allows one public IP to be shared by multiple hosts

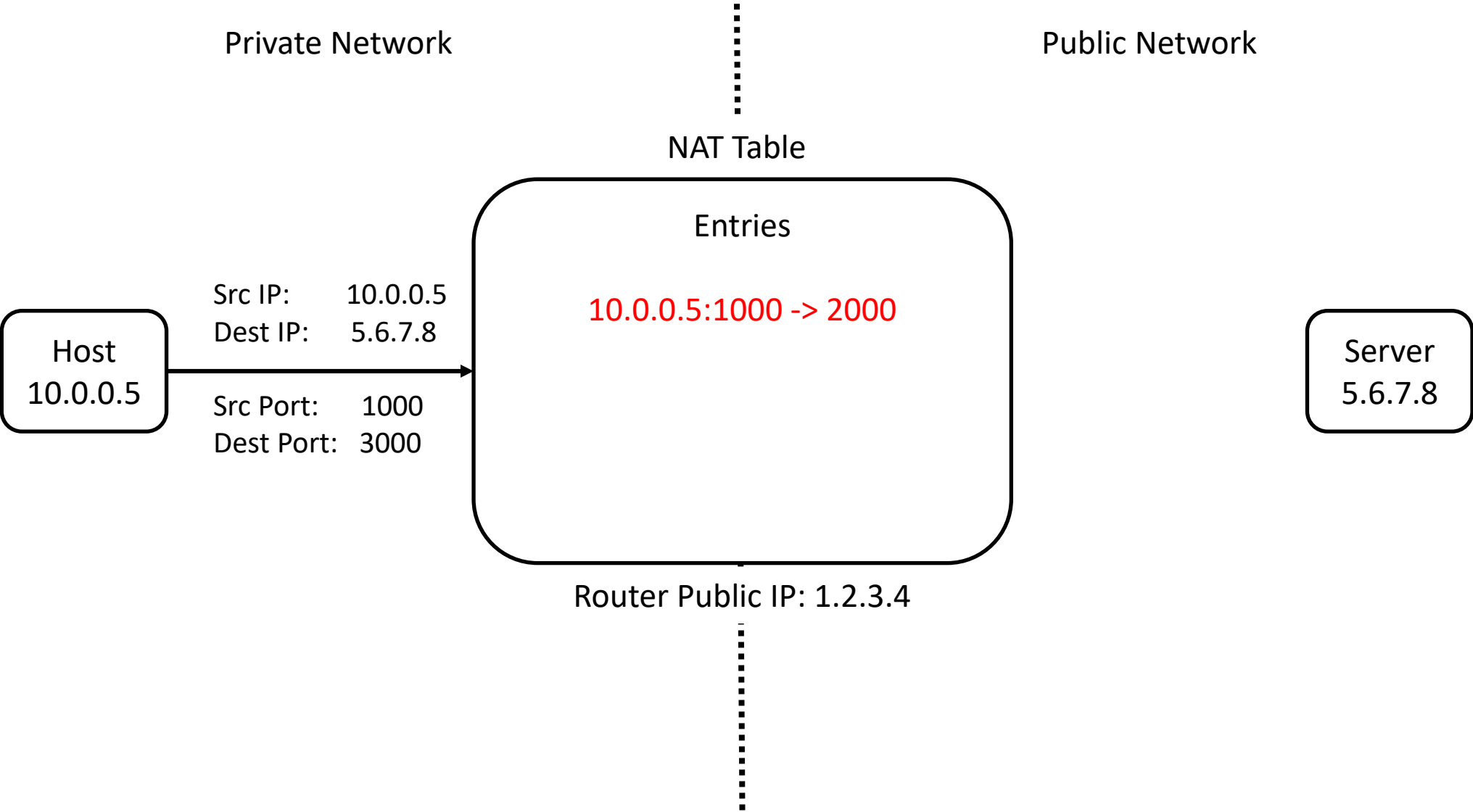
Translates (internal IP, src port) → (external IP, external src port)

In this case those are not physical ports but transport layer ports

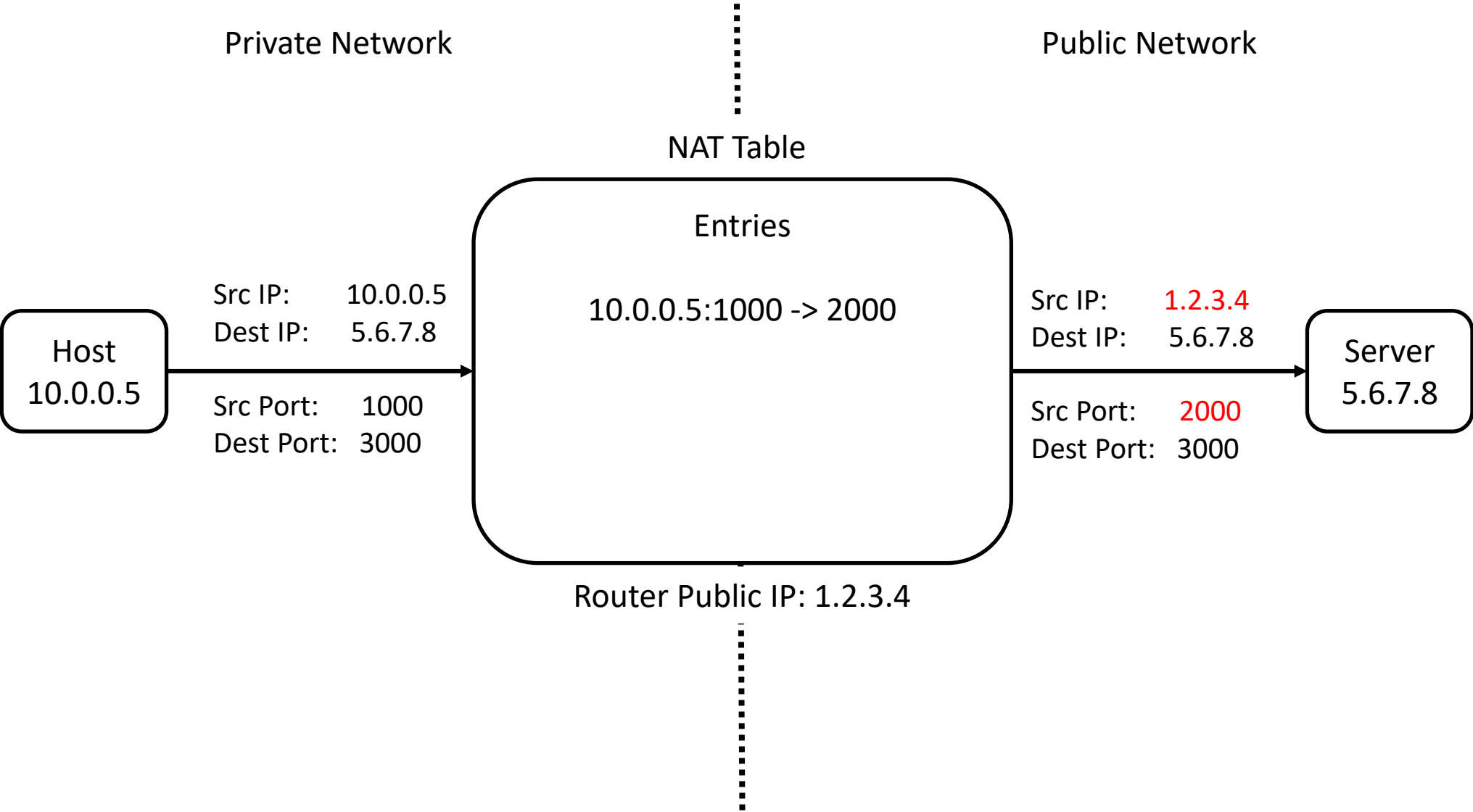
NAT (Network address translation)



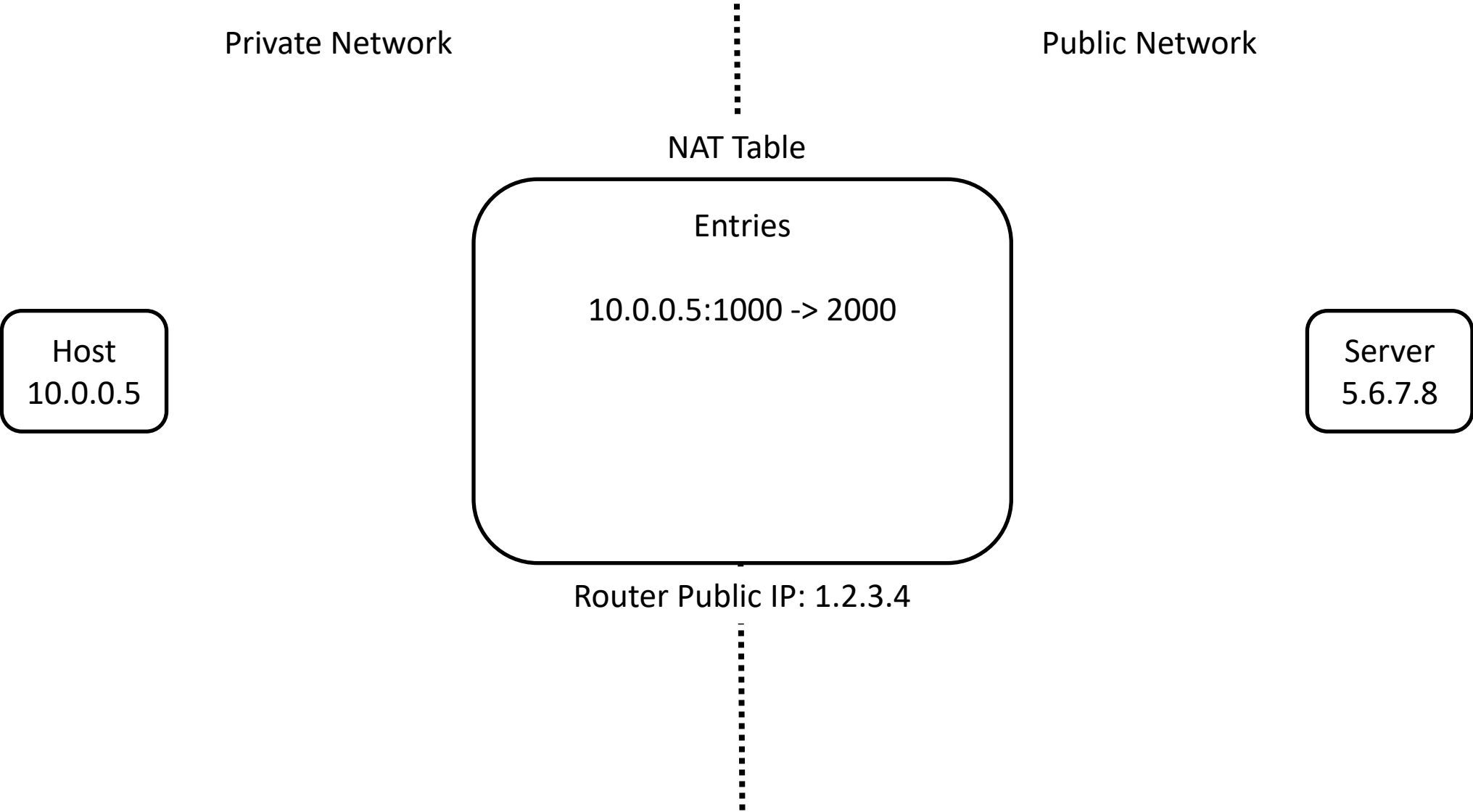
NAT (Network address translation)



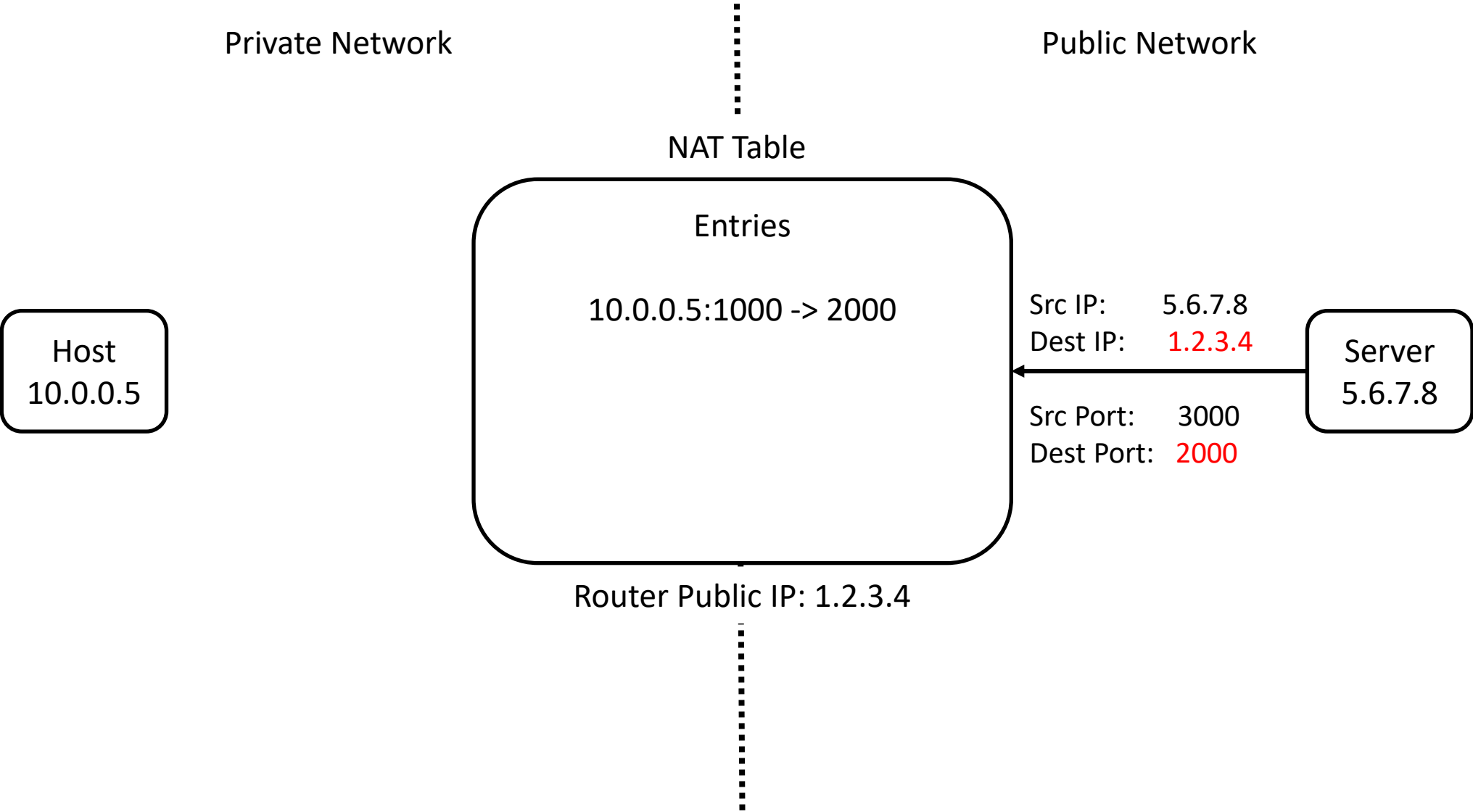
NAT (Network address translation)



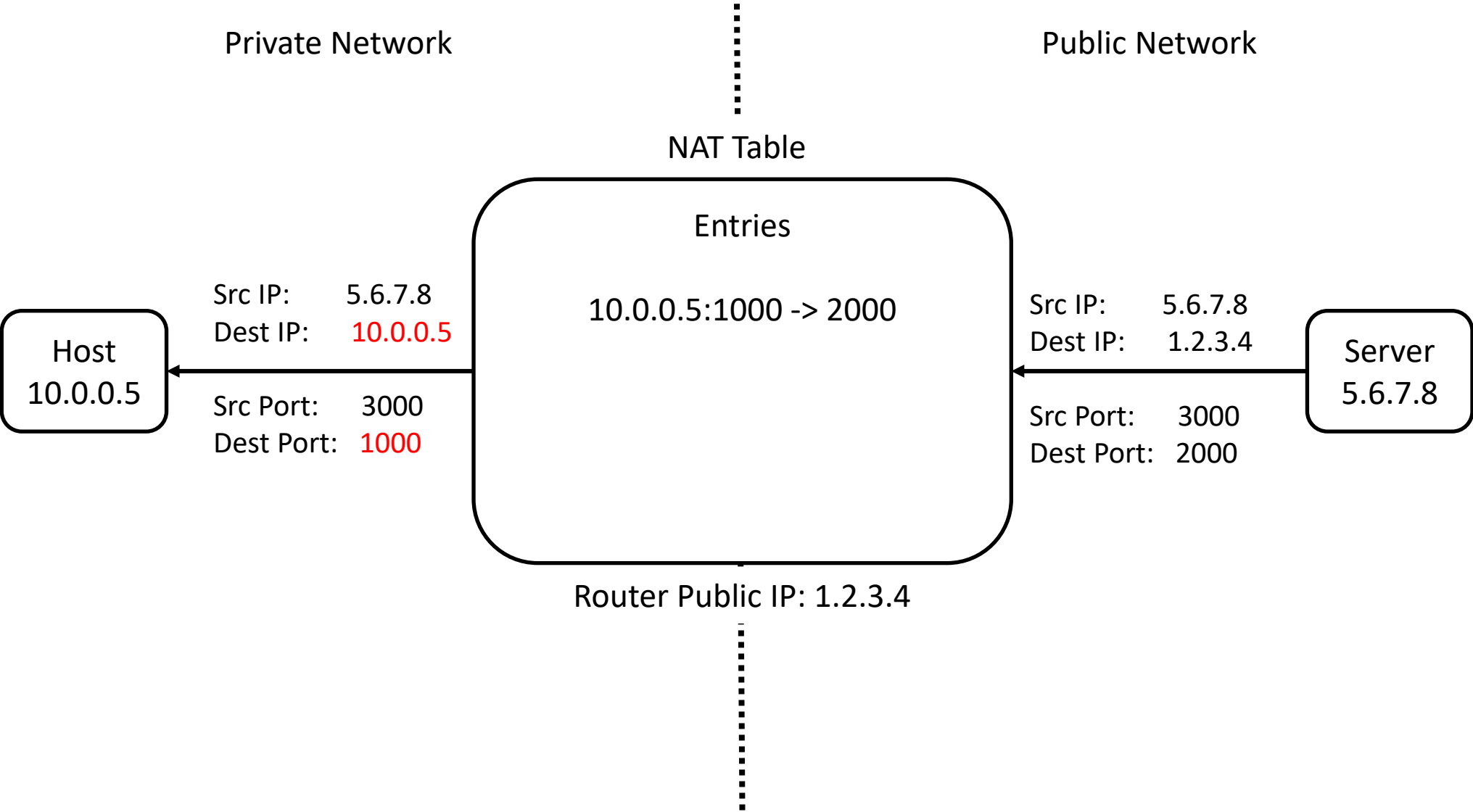
NAT (Network address translation)



NAT (Network address translation)



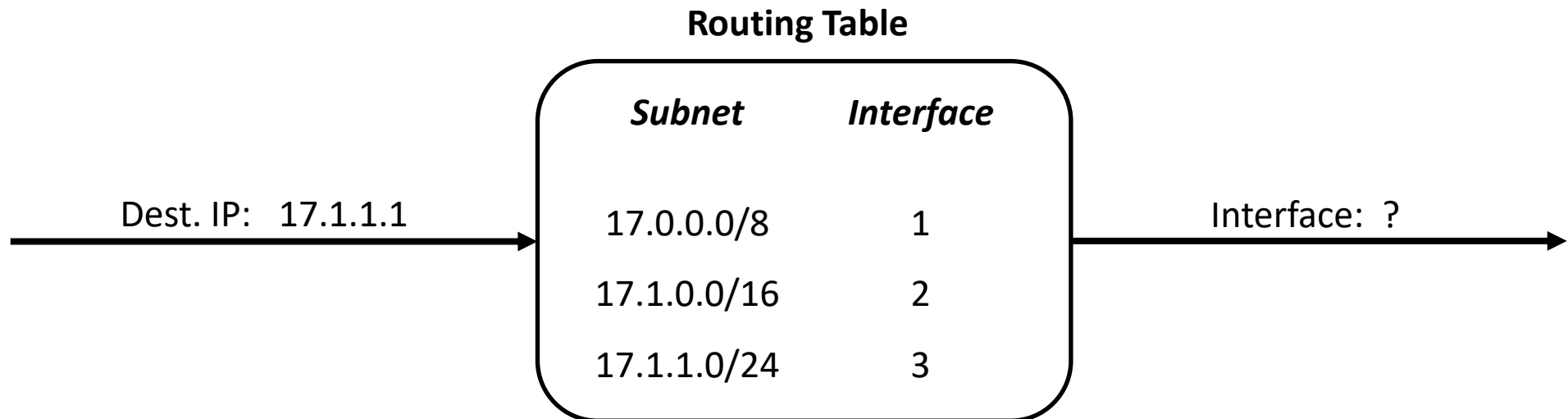
NAT (Network address translation)



Longest Prefix Matching

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

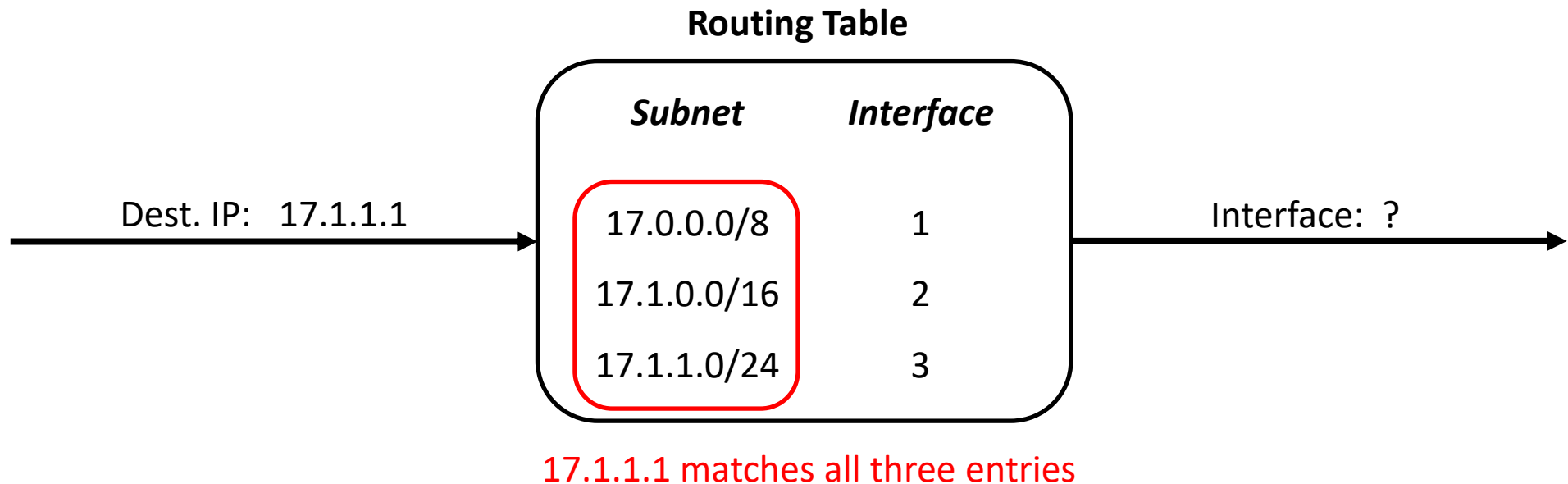
Multiple entries can match within the routing table but only the one that matches the longest prefix (matching bits from the left) is chosen



Longest Prefix Matching

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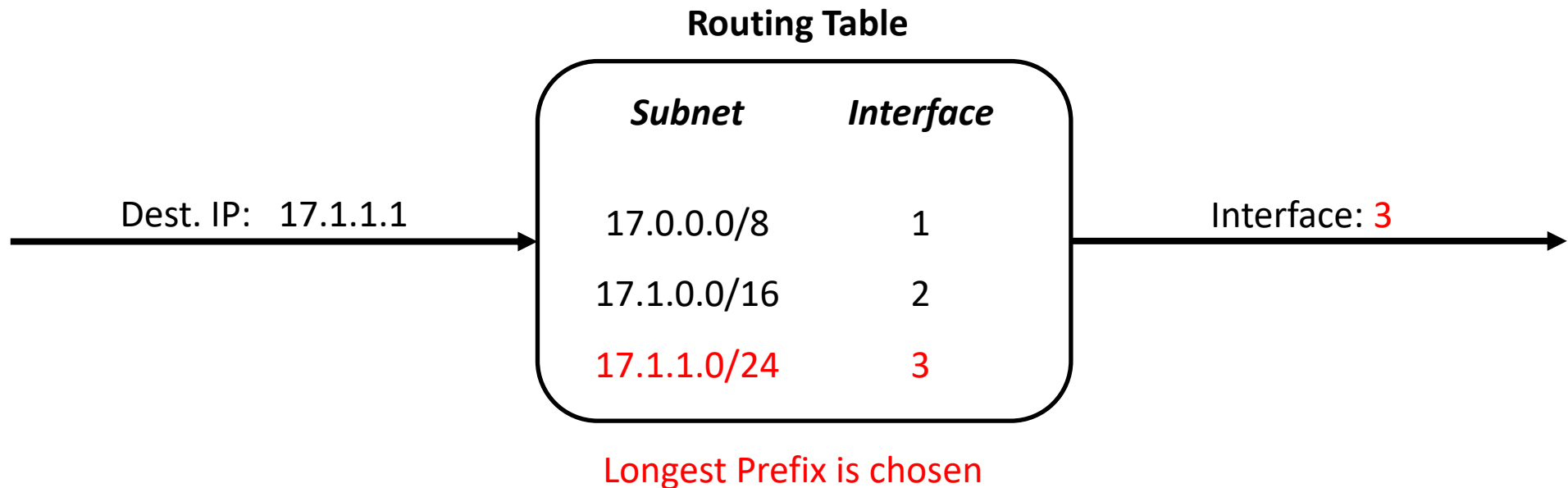
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Longest Prefix Matching

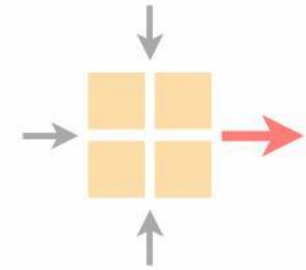
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Communication Networks

Exercise 4

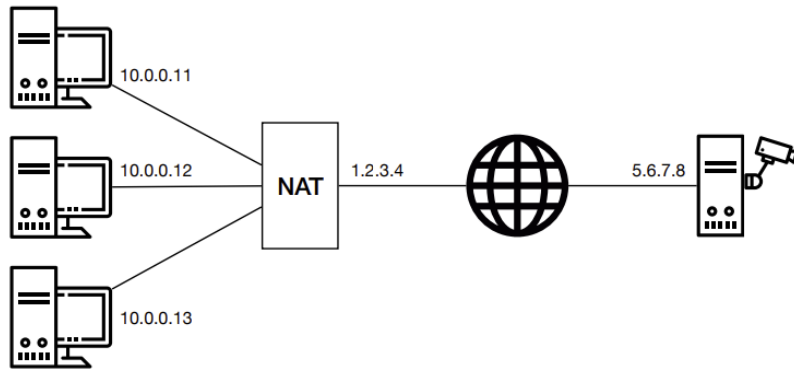


Important lecture topics

**Introduction to this week's
exercise**

Time to solve the exercise

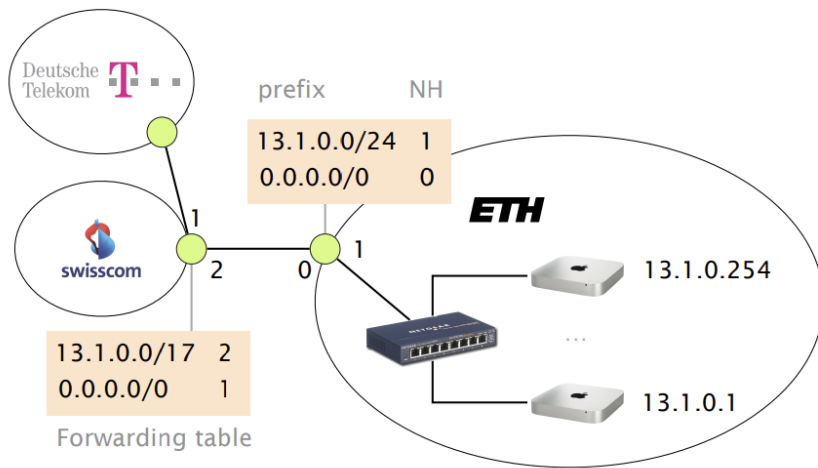
Task 4.1 NAT (Network address translation)



Apply the concept of NAT to this exercise

What happens at the NAT when we send a packet from the private Network towards the Internet?

Task 4.2 Forwarding



IP addressable addresses



No. of IPs available for devices

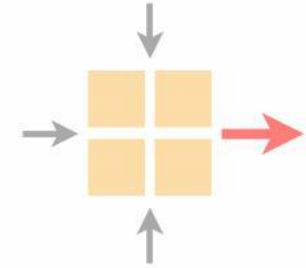
Task 4.3 Forwarding Tables

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 4



Important lecture topics

Introduction to this week's
exercise

Time to solve the exercise