

Computer Networks

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Material with thanks Mosharaf Chowdhury, and many other colleagues.

Network Address Translation

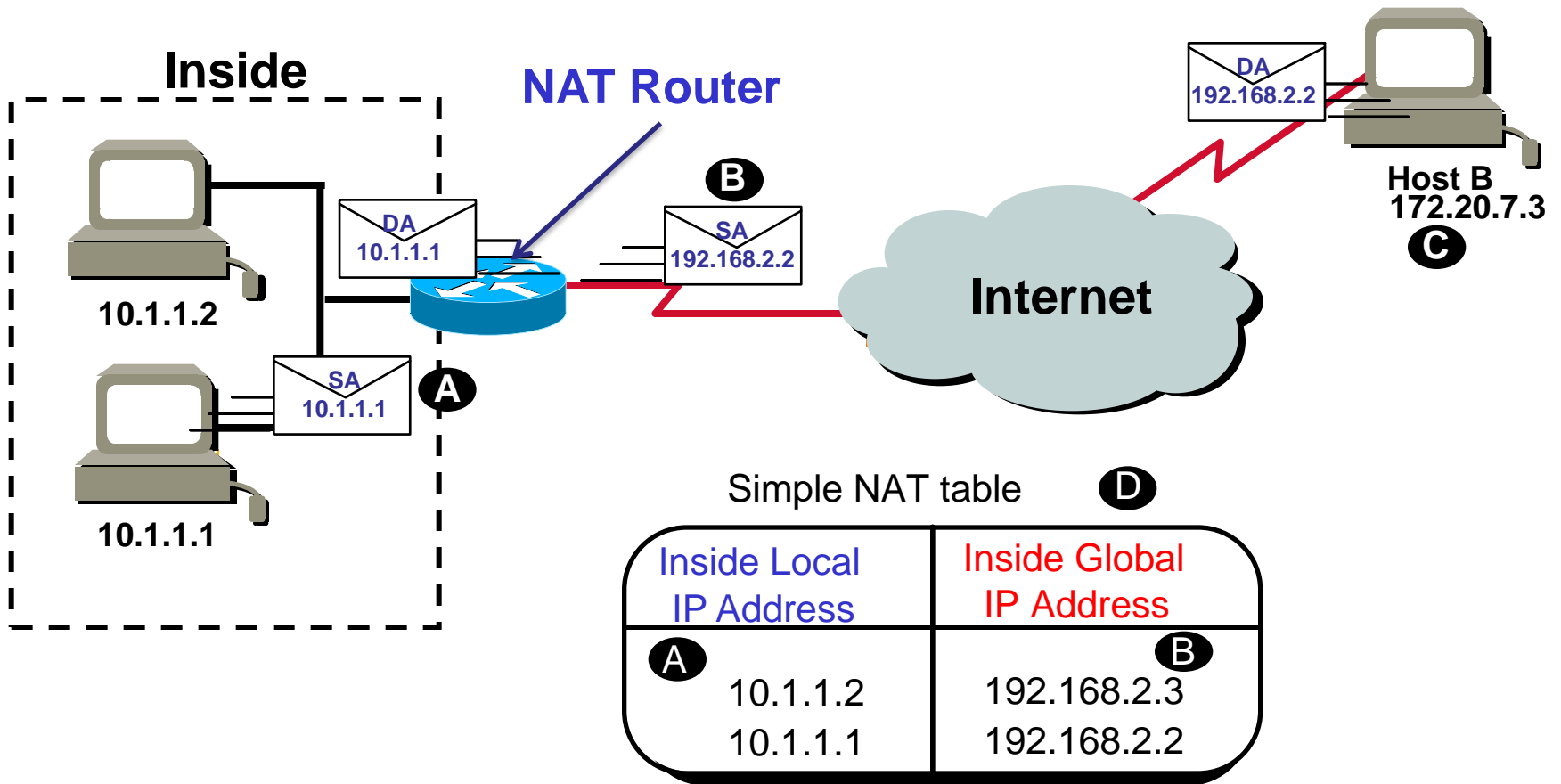
NAT

- ✓ Enables different sets of IP addresses for **internal and external** traffic
- ✓ The IP address translations occur where the **Intranet interfaces** with the broader Internet

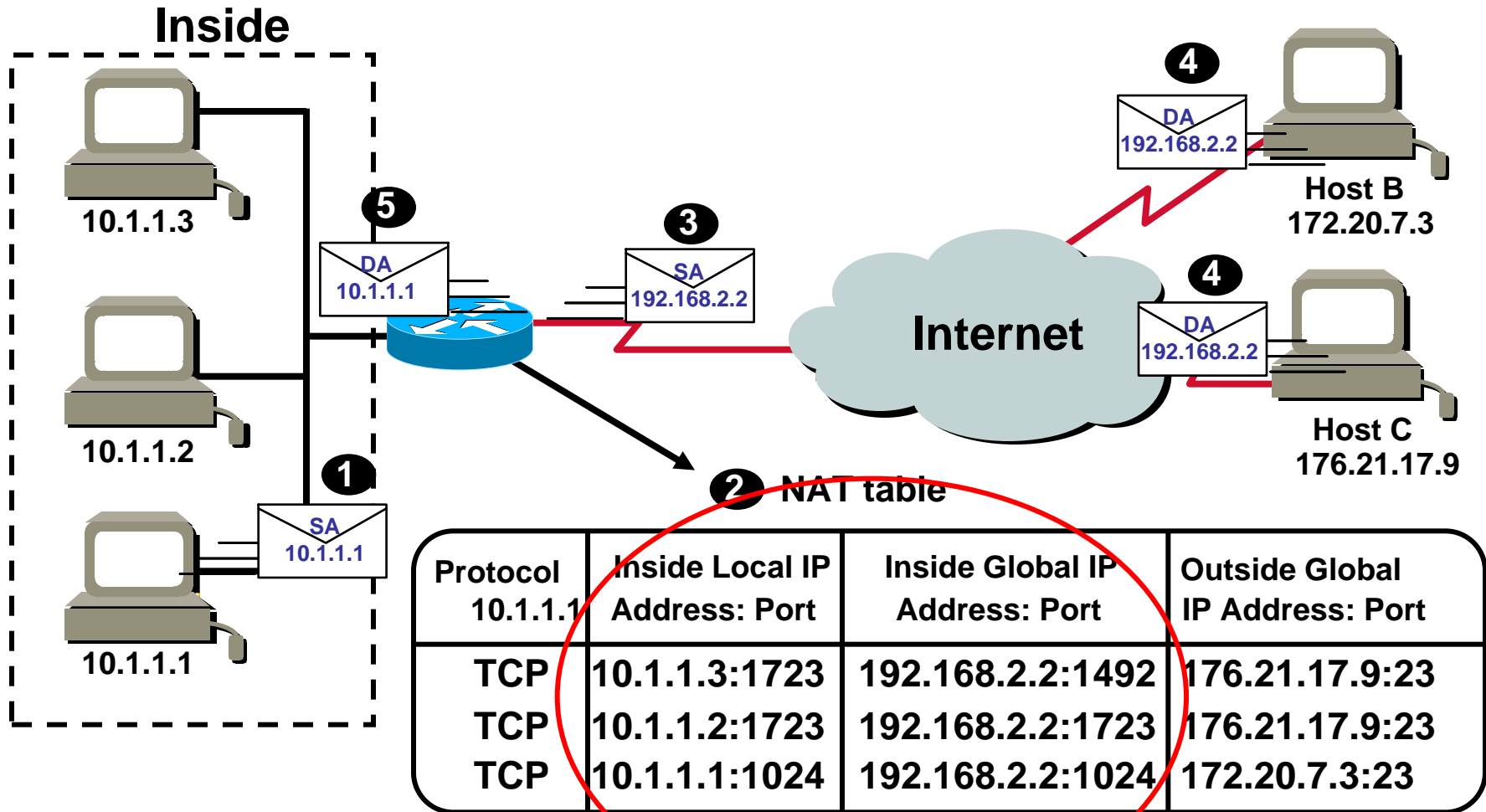
Purposes

- ✓ Acts as a firewall by **hiding internal IP addresses**
- ✓ Enables an enterprise (organization) to **use more internal IP addresses**
- ✓ Isolate the (organization / ISP) changes

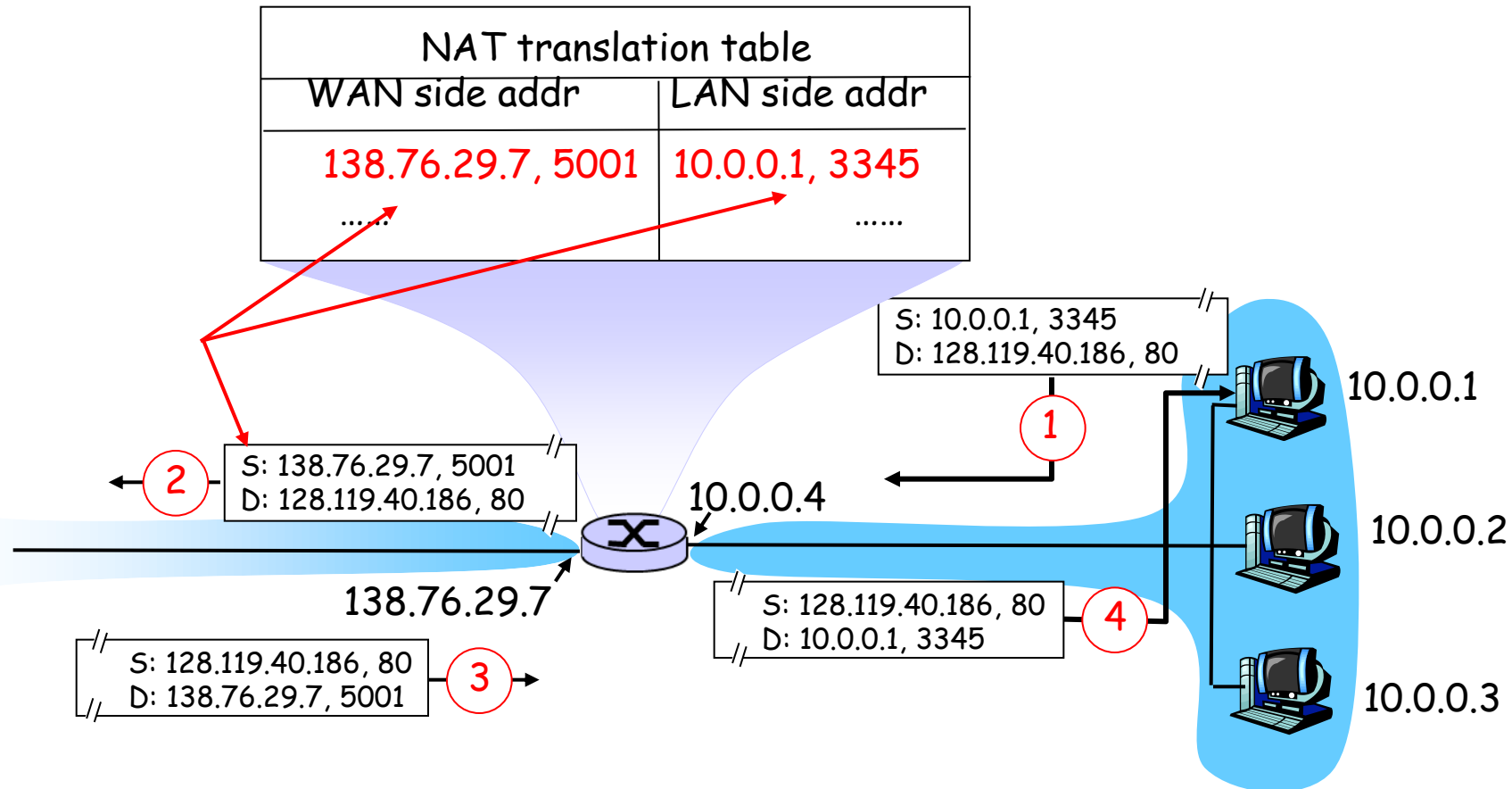
Illustration of NAT



Overloading Global Address



Network Address Translation



2 Types of NAT

Static NAT

- ✓ A private IP address is mapped to **one reserved public IP address**
- ✓ Usually for server hosts in Intranet

Dynamic NAT

- ✓ The NAT router keeps a **pool of registered IP addresses**, and assign to private IP addresses on demand
- ✓ Usually for client PCs in Intranet

NAT is Controversial

Addresses changes from time to time

- ✓ E.g. must be taken into account by P2P applications

Relaying in Skype

- ✓ NATed **supernodes** establishes connection to **relay**
- ✓ External client connects to relay
- ✓ Relay bridges packets between 2 connections

