<epam>

Networks Services

Computer Networks

TRAINING

CENTER

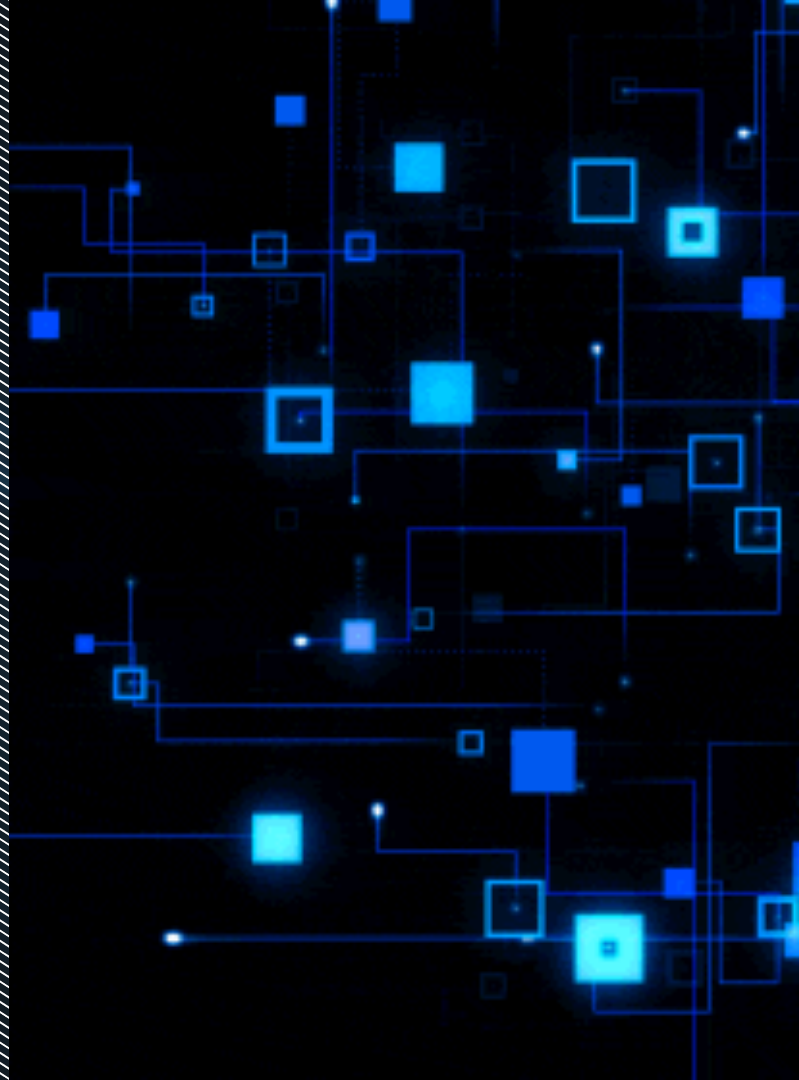
<epam>

Siarhei Kantarovich

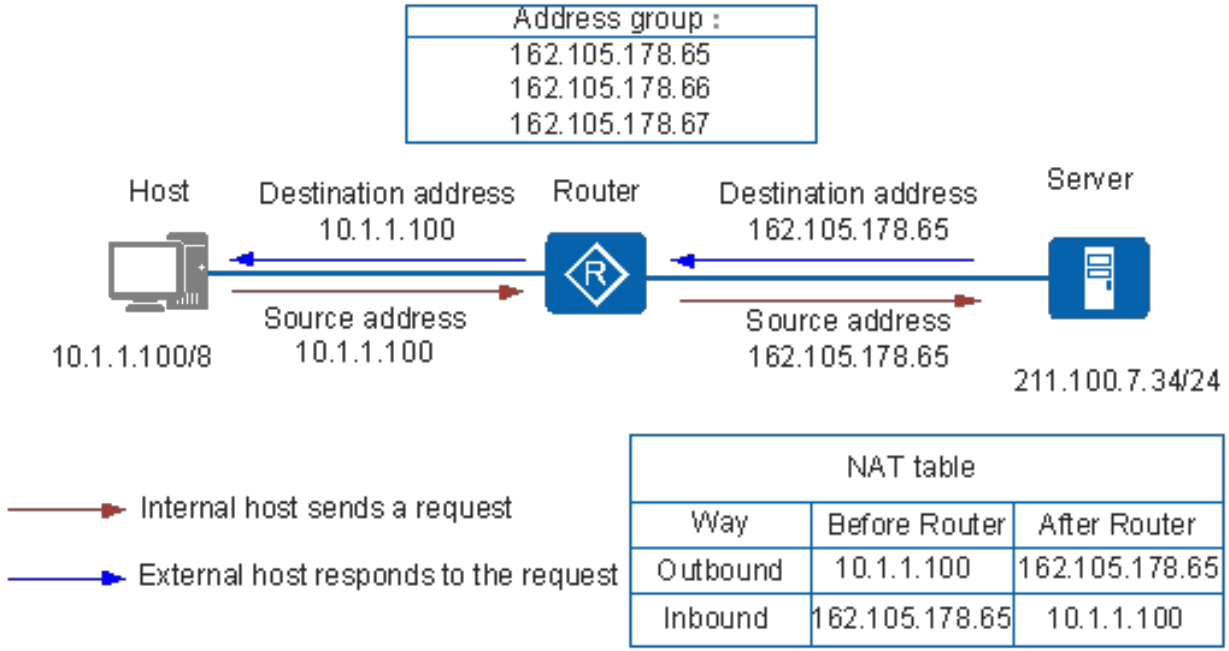
<epam>

Agenda

- NAT

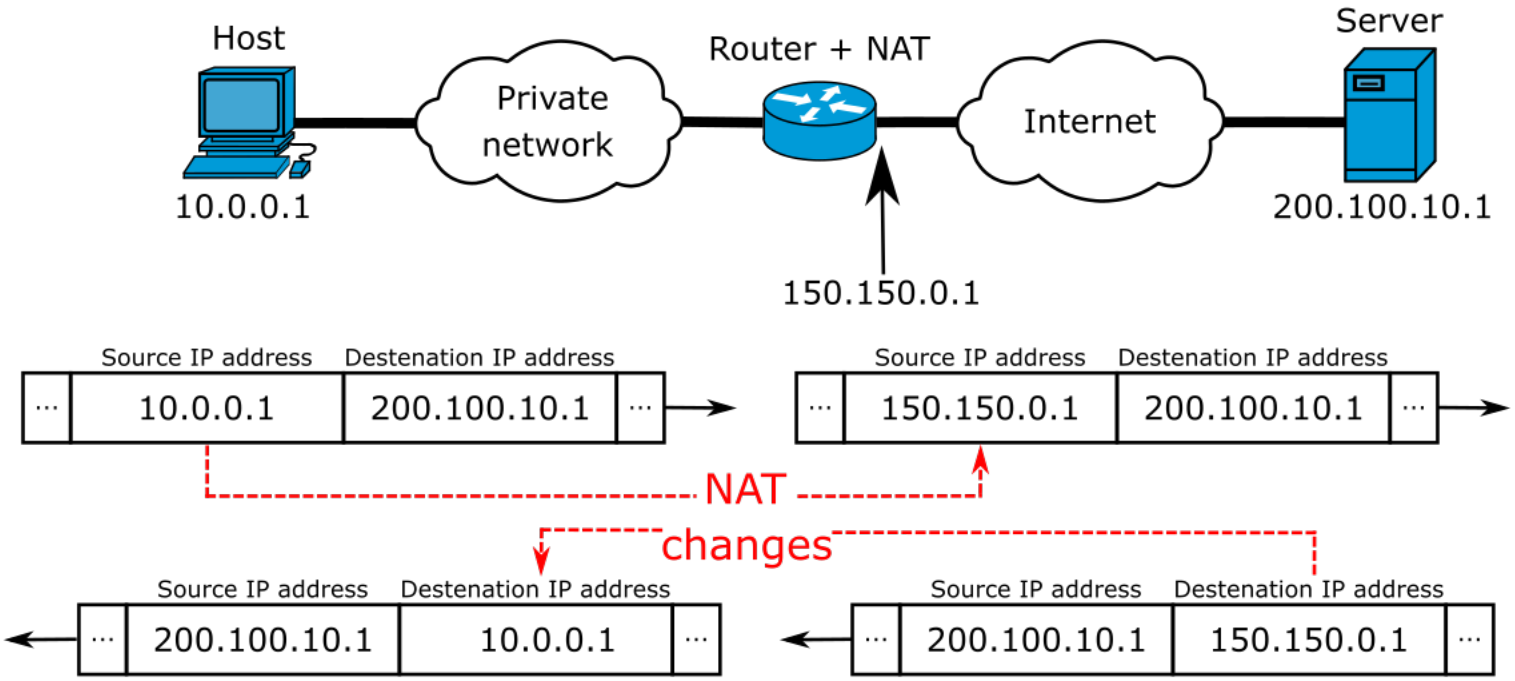


NAT – Network Address Translation



NAT table		
Way	Before Router	After Router
Outbound	10.1.1.100	162.105.178.65
Inbound	162.105.178.65	10.1.1.100

NAT – Network Address Translation



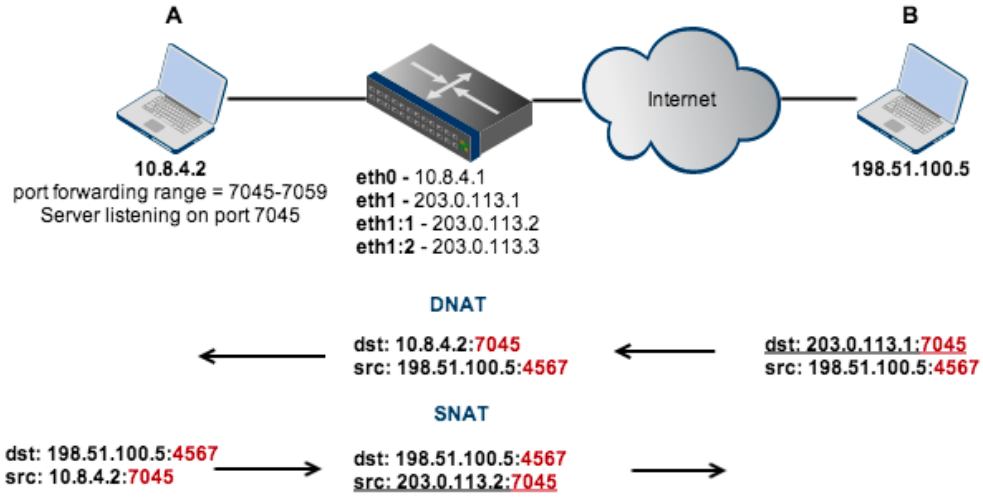
NAT – Network Address Translation

In *Source Network Address Translation* (SNAT), the NAT router modifies the IP address of the sender in IP packets. SNAT is commonly used to enable hosts with *private addresses* to communicate with servers on the public Internet.

RFC 1918 reserves the following three subnets as private addresses:

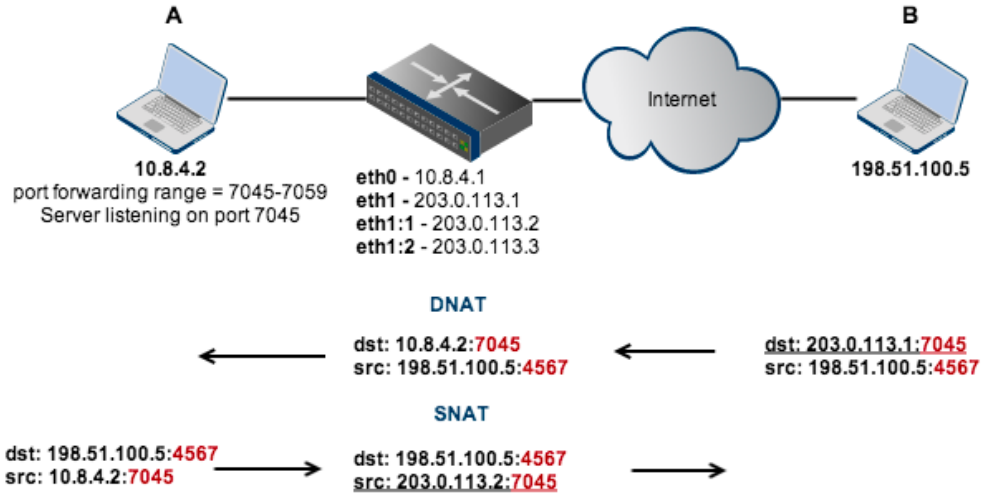
- 10.0.0.0/8
- 172.16.0.0/12
- 192.168.0.0/16

These IP addresses are not publicly routable, meaning that a host on the public Internet can not send an IP packet to any of these addresses. Private IP addresses are widely used in both residential and corporate environments.



NAT – Network Address Translation

Destination network address translation (DNAT)
What is DNAT?
Destination network address translation (DNAT) is most often used to redirect packets destined for a particular IP address, or a specific port on an IP address, on one host to a different address and/or port, possibly on a different host. As this functionality is mostly used to forward packets arriving on a particular port to the same port on a different host it is often also referred to as port-forwarding.
How does DNAT work?
To make the DNAT example, and especially the DNAT caveats discussed in the next section, easier to understand let's examine what happens when a packet arrives on the WAN interface destined for an address and port which we have decided to forward.



NAT – Network Address Translation

SNAT vs DNAT –

PARAMETER	SNAT	DNAT
Abbreviation for	Source NAT	Destination NAT
Terminology	SNAT changes the private IP address of the source host to public IP address. It may also change the source port in the TCP/UDP headers. SNAT is typically used by internal users to access the Internet.	Destination NAT changes the destination address in IP header of a packet. It may also change the destination port in the TCP/UDP headers. DNAT is used when we need to redirect incoming packets with a destination of a public address/port to a private IP address/port inside your network.
Use Case	A client Inside LAN and behind Firewall wanted to browse Internet	A Website Hosted inside Data Center behind the Firewall and needs to be accessible to users over Internet
Address Change	SNAT changes the source address of packets passing through NAT device	DNAT changes the destination address of packets passing through the Router
Order of Operation	SNAT is performed after the routing decision is made.	DNAT is performed before the routing decision is made.
Communication Flow	When inside secured Network initiates communicates with outside world , SNAT happens	When outside insecured Network initiates communication with inside secured Network , DNAT happens
Single/Multiple hosts	SNAT allows multiple hosts on the “inside” network to get to any host on the “outside”	DNAT allows any host on the “outside” network to get to a single host on the “inside” network