IPv6 addresses

Three address types: no broadcast
- Unicast (source or destination):
    - Global unicast: 2000:: … (4000:: - ::1)   E.g: 3FFF::10/64
    - Link-local: FE80::/10   E.g: FE80::1/64
    - Loopback: ::1/128
    - Not specified: ::/128
    - Unique local: FC00::/7 … FD::/7   E.g: FCFF::F/7
    - Embedded IPv4:   ::FFFF:/96   E.g: ::FFFF:192.1.56.10/96
    - Reserved: ::/8
- Multicast (destination):   FF00::/8
- Group identifiers (IANA):
    - Link-local all nodes inside of broadcast domain   FF02::1
    - Link-local all routers inside of broadcast domain   FF02::2
    - Link-local all router inside local network   FF02::3
- Anycast (destination):
    - Any node receives the packet
    - Routing mechanism decides to which destination sends the packet.

IPv6 routing

Configuration commands

- *# ifconfig eth0 add 2001:DE12::5/64*
- *# ifconfig eth0 del 2001:DE12::5/64*
- *# route –A inet6 add –net 2001:DE12::/64 eth0*
- *# route –A inet6 del –net 2001:DE12::/64 eth0*
- *# route –A inet6 add –net 2001:DE12::/64 gw 2001:DE13::1 eth0*
- *# route –A inet6 del –net 2001:DE12::/64 gw 2001:DE13::1 eth0*
- *# ip -6 route add 2001:DE12::/64 dev eth0*
- *# ip -6 route del 2001:DE12::/64 dev eth0*
- *# ip -6 route add 2001:DE12::/64 via 2001:DE13::1*
- *# ip -6 route del 2001:DE12::5/64 24 via 2001:DE13::1*
- *# route –A inet6 add default gw 2001:DE12::5*
- *# route –A inet6 del default*
- *# sysctl –w net.ipv6.conf.all.forwarding=1*

- *> route add 2001:DE12::/64 2001:DE13::1*
- *> route delete 2001:DE12::/64*

Show and analysis commands

- *# ifconfig*
- *# itconfig eth0*
- *# route –A inet6*
- *# netstat –nr*
- *# ip -6 route show*
- *# ping6 2001:DE12::5*
- *# traceroute6 2001:DE12::5*
- *# traceroute6 –l 2001:DE12::5*
- *# traceroute6 –T 2001:DE12::5*

- *> netstat –nr*
- *> route print -6*
- *> ping -6 2001:DE12::5*
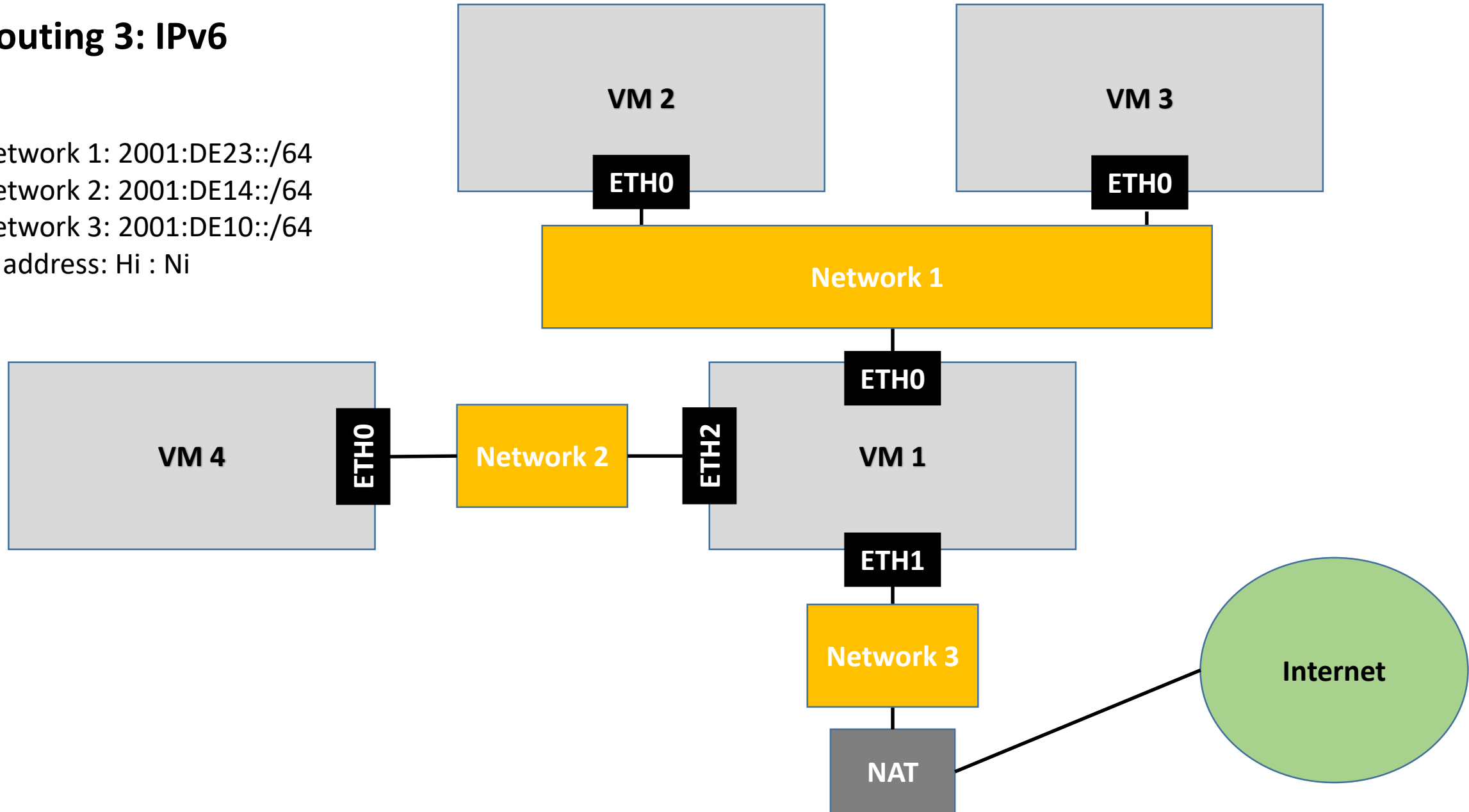- *> tracert -6 2001:DE12::5*
- *> tracert -6 –d 2001:DE12::5*

Routing 3: IPv6

Network 1: 2001:DE23::/64
Network 2: 2001:DE14::/64
Network 3: 2001:DE10::/64
IP address: Hi : Ni

Routing 4: IPv6

Network 1: 2001:DE23::/64
Network 2: 2001:DE14::/64
Network 3: 2001:DE10::/64
Network 4: 2001:DE45::/64
IP address: Hi : Ni