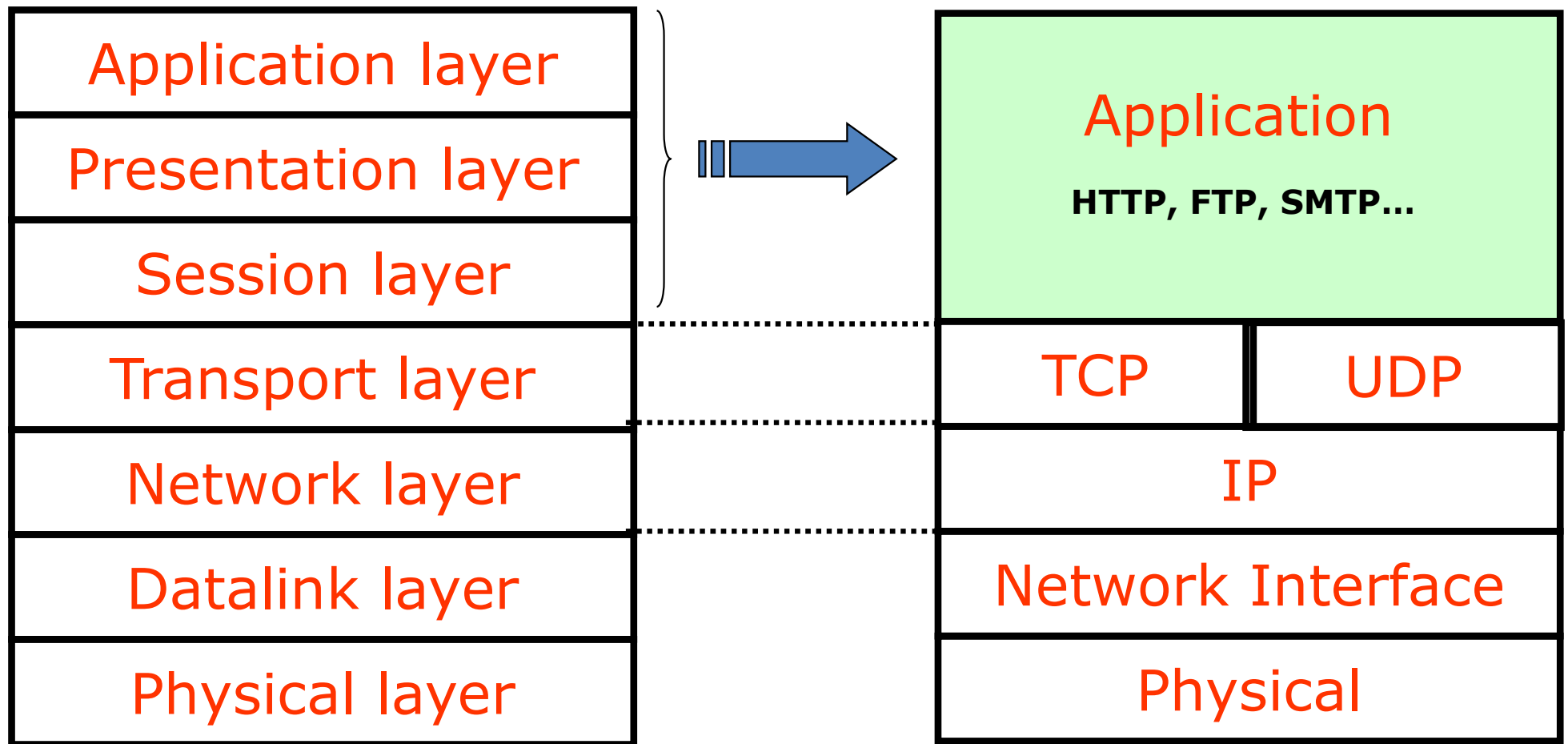# Network configuration

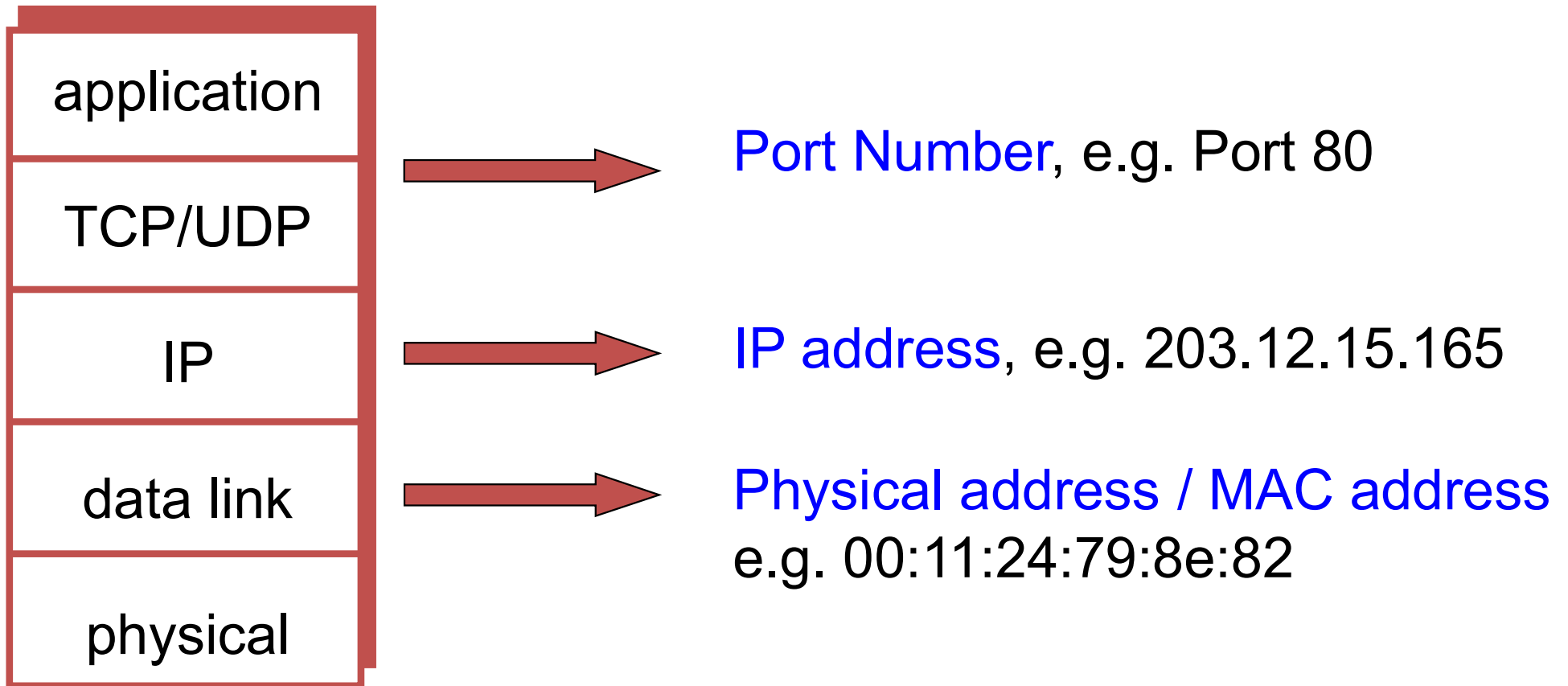Ngoc Nguyen Tran - SoICT

Contents

- Network information needs to be configured
- Tools to configure
- Configuration files
- Tools to check the configurations

Remind the network knowledge

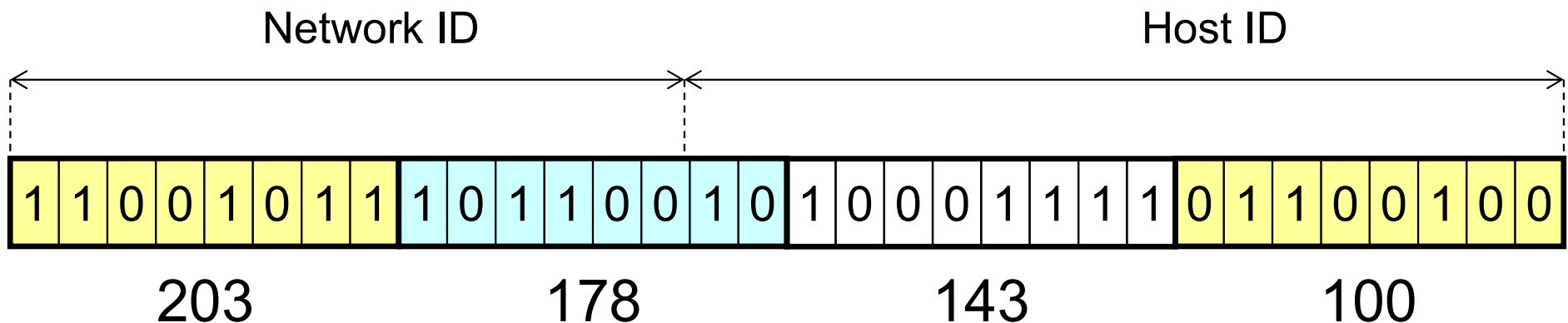## OSI and TCP/IP Model

Remind the network knowledge

application
TCP/UDP
IP
data link
physical

Port Number, e.g. Port 80

IP address, e.g. 203.12.15.165

Physical address / MAC address
e.g. 00:11:24:79:8e:82

Network ID (subnet) và Host ID (phần host)

- IP Address has two parts
  - Host ID
  - Network ID

Network ID	Host ID

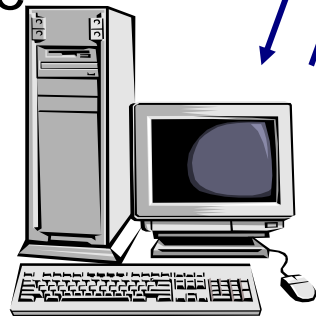| 1 1 0 0 1 0 1 1	1 0 1 1 0 0 1 0	1 0 0 0 1 1 1 1	0 1 1 0 0 1 0 0
203	178	143	100

- How to distinguish Network ID and Host ID
  - Classes (A,B,C,D,E)
  - Netmask and subnet

Domain names
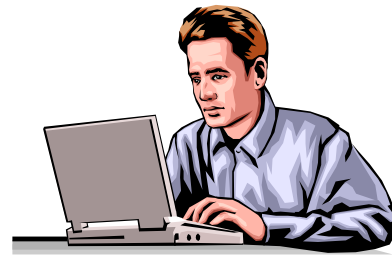
- The computer understands the number
- On the other hand, human can remember name easier than number

Necessity of name resolution

User

I want to see the website www.soict.hust.edu.vn

Please access to the server 202.47.142.40

Name server

WEB server
202.47.142.40

You can input the IP address instead of domain name

Network information

- Configure network connection
  - NIC: Network Interface Card.
  - IP Address/Netmask
  - Gateway
- Configure domain names
  - NIS, DNS, host
- Check problems

Configuration files

Tên tệp	Ý nghĩa
/etc/init.d/networkNNT1 service network-manager restart (Ubuntu) systemctl start NetworkManager.service (CentOS)	Turn on/off/restart network service
/etc/network	Configure network service
/etc/sysconfig/network-script	Configure NIC
/etc/resolve.conf	Configure DNS
/etc/hosts	Reference host and name-ip
/etc/nsswitch	Configure which services are to be used to determine information such as hostnames, password files, and group files

NNT1 Kiểm tra lại với Ubuntu và CentOS mới, dịch vụ đã thay đổi
Nguyen Ngoc Tran, 20/10/2020

/etc/networks

- Cấu hình IP tĩnh:

NETWORKING=yes
HOSTNAME=*my-hostname*   *- Hostname is defined here*
                                                            and by command hostname
FORWARD_IPV4=true   *- True for NAT firewall gateways and linux routers.*
                                                            False for everyone else - desktops and servers.
GATEWAY="*XXX.XXX.XXX.YYY*"   *- Used if your network connect to internet.*
                                                            Gateway not defined here for DHCP client.

- Cấu hình phía client dùng DHCP :

NETWORKING=yes
HOSTNAME=*my-hostname*   *- Hostname is defined here and by command hostname*
                                                            (Gateway is assigned by DHCP server.)

NNT2   Will be removed soon, old knowledge
                    Nguyen Ngoc Tran, 20/10/2020

/etc/resolv.conf

- Show DNS servers used to translate domain names

search *name-of-domain.com* - ***Name of your domain or ISP's domain if using their name server***

nameserver *XXX.XXX.XXX.XXX* - ***IP address of primary name server***

nameserver *XXX.XXX.XXX.XXX* - ***IP address of secondary name server***

/etc/hosts

- contains a mapping of IP addresses to URLs
- override the IP-address-to-URL mapping returned by a DNS server

127.0.0.1   *your-node-name.your-domain.com* localhost.localdomain localhost

XXX.XXX.XXX.XXX   *node-name*

Check network configurations

Thao tác	Ý nghĩa
ping host-ip	NIC OK?
ping GW	Local network OK?
ping live public IP	Network configuration OK
ping live domain name	DNS configuration OK
telnet	Check remote services

Thao tác	Thông tin
traceroute	Check the path of IP datagrams
ifconfig	Configure NIC
route	Routing tables
cat /etc/resolve.conf	DNS
hostname	Host names

Configure by using commands

Thao tác	Câu lệnh
Set up IP address	ifconfig NIC-name IP netmask MASK
	Immediate change
Set up GW	route add default GW IP
	Immediate change
Turn off NIC	ifconfig en0sp3 down / ifdown en0sp3
Turn on NIC	ifconfig en0sp3 up / ifup en0sp3
Set up host name	hostname