Intro to Computer Networks

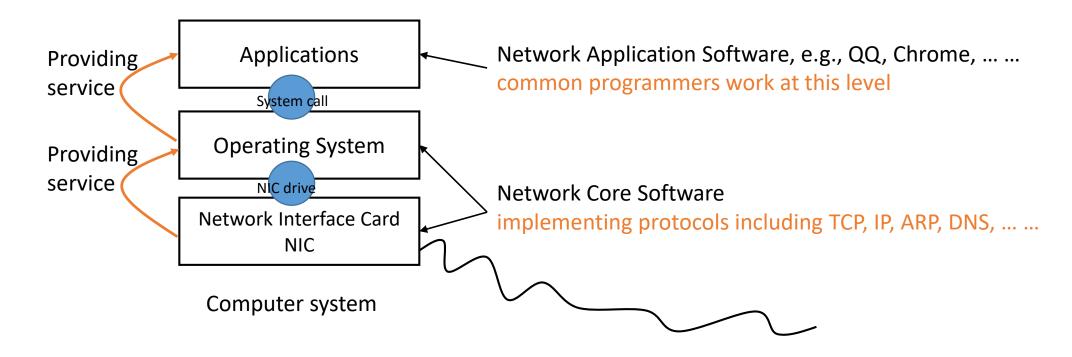
Lecture 1 Packet-switching and Layer model

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The service model I

Protocols must be implemented as software somehow and somewhere



Network applications are directly used by end users, and must rely on the underlining network core software/protocols for data communication.

The Layered architecture

Network Stack

End System

Network User **Network protocol** 5. Application software requirements Network protocols specify mechanisms for devices to identify and make connections with each other, as well as formatting rules that specify how data is packaged into Reliable 4. Transport messages sent and received. transmission OS 3.Network Addressing/Routing MAC addressing, Error 2. Data Link NIC handling 1. Physical The upper layer uses the services provided by the lower layer!

Problems and principles

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System model and protocol stack

Network software

5. Application

User requirements

Web/HTTP, etc.

The Internet

OS

4. Transport

Reliable transmission

TCP/UDP, etc.

3.Network

Addressing/Routing

IP, Routing Algorithms

NIC

2. Data Link

MAC addressing Error handling

CSMA/CD, ARP, ...

1. Physical

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Message transmission

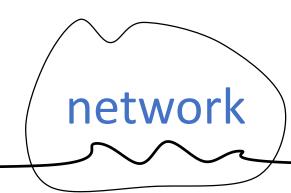
• 5.Application Layer
HTTP

4.Transport layer
TCP

3.Network layer
IP

2.Data link layer
Ethernet

1.Physical layer



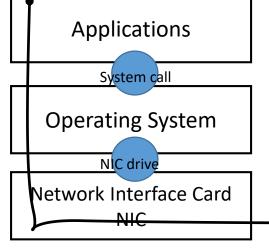
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2.Data link layer
Ethernet

1.Physical layer





Applications

System call

Operating System

NIC drive

Network Interface Card

NIC

A detail exam of message transmission

