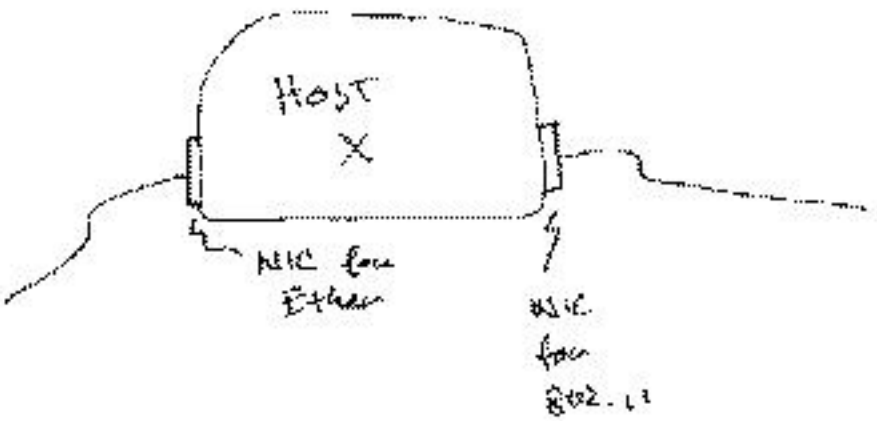
What is ARP ?

Book-keeping program (has small data base) to convert between MAC addresses and IP addresses.

Note:



Host X has <u>two</u> NICs;

it has <u>two</u> IP addresses.

Hence

IP-address $\longleftrightarrow$ host

1 - 1

also, there are IP-addresses for LAN broadcast, multicast

2.8 questions (RFC 1180)

When sending out an IP packet, how is the destination Ethernet address determined?

How does IP know which NIC to use when sending a packet?

How does a client on one host reach the server on another?

Why do both TCP and UDP exist?

"Above" TCP/IP

there are higher-level types of addresses

FQDN's : server.cs.uiowa.edu

↑

meaningless to TCP/IP

Email : ~~[illegible]~~

ted-herman@uiowa.edu

URL's :

~~www~~

http://sports.yahoo.com/index.html

Conversion is not a nice modular function !

- table-lookup, databases, hashing
- search algorithms.

Tricks with Addresses

IP: 32-bits, eg

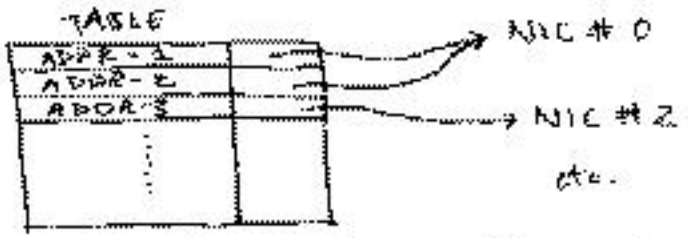
0x C0A8 2A05 (hex)

most "logical", but common practice uses dotted decimal

192.168.42.11

Ugly Problem

To make decisions on what to do with a packet, must use table-lookup based on IP-addresses.



Since the Internet has millions of IP addresses, this idea breaks down.

What to do?

(1) "FAITH-BASED" forwarding

(2) Wildcard table compression.

WILDCARD matching

table

EXAMPLE:

Addr = 192.168.42.11

mask = 24 bits

NIC = Ethernet # 0

this matches 192.168.42.* (24 bits)

Often, this type of mask defines a subnet