

# Recitation 2: DNS

MIT - 6.033  
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# Plan

- What is DNS for?
- How DNS works
- Hands-on with Dig
- Security issues

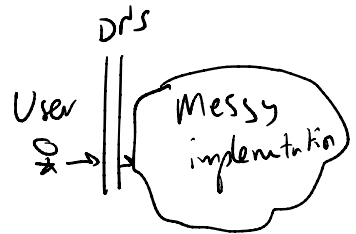
Logistics

# What is DNS for?

Mapping hostnames  $\rightarrow$  IP addresses  
logical addr                      physical addr

Why would we want this?

- Clean UI
- Clean separation of concerns
- Fault tolerance
- Load balancing...



$\rightarrow$  Remember phone numbers? Phone books?

Why is it cool?

- decentralized
- scalable ("Internet scale")
- fault tolerant
- extensible

# How DNS works? (Credit to Amir for diagram!)

## What is IP of Google.com?

student.mit.edu

---

Root server:  
199.9.14.201

b.root-servers.net 199.9.14.201

---

<u>name</u>	<u>addr</u>	<u>type</u>
edu.		
com.	192.5.6.30	NS
net.		
tv.		
⋮		

a.gtld-servers.net  
192.5.6.30

---

<u>name</u>	<u>addr</u>	<u>type</u>
google.com.	216.239.32.10	NS

ns1.google.com 216.239.32.10

---

<u>name</u>	<u>addr</u>	<u>type</u>
google.com	142.250.64.10	A

## Record types

A	- IPv4 address
AAAA	- IPv6 address
CNAME	- Alias "Common name"
MX	- mail
NS	- Name server

⋮  
many others, LOC

What does name file look like?


Show zone file for .com

↳ If you actually look up google.com, you get an NS record pointing to HOSTNAME!

↳ How to resolve?  
Hints?

How do users create bindings?

Example: WebDNS.csail.mit.edu



Dig

exercise

goes here ...

# Security issues

DO NOT TRY THIS AT HOME!

\* No privacy

\* No authentication (cache poisoning)

\* Censorship (see UK)

\* Anyone can register any name.

finance.mit.edu

google.com

mit.co.uk

mit.edu

⋮

IF time, mention DoH....