6.033 Computer System Engineering
Spring 2009

6.033 Lecture 14

DNS and Content Delivery Networks

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Key ideas:
    Domain name service
    Content delivery networks
    Network overlays

The "dig" Command

dig csail.mit.edu   "Time to Live" (TTL)

Type of record
A = "Address"
NS = "Name server"

;; QUESTION SECTION:
;csail.mit.edu.   IN A   *The question we asked*

;; ANSWER SECTION:
csail.mit.edu.   5921   IN   A   128.30.2.121   *The answer*

;; AUTHORITY SECTION:
csail.mit.edu.   15152   IN NS   AUTH-NS0.csail.mit.edu.
csail.mit.edu.   15152   IN   NS AUTH-NS1.csail.mit.edu.
csail.mit.edu.   15152   IN   NS AUTH-NS2.csail.mit.edu.
csail.mit.edu.   15152   IN   NS AUTH-NS3.csail.mit.edu.

Servers that can answer the question

graphics8.nytimes.com from T-Mobile Cell Phone

```
-bash ~ % dig graphics8.nytimes.com

; <<>> DiG 9.4.2-P2 <<>> graphics8.nytimes.com
;; global options:  printcmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 27018
;; flags: qr rd ra; QUERY: 1, ANSWER: 4, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;graphics8.nytimes.com.          IN    A

;; ANSWER SECTION:
graphics8.nytimes.com. 281  IN    CNAME    graphics478.nytimes.com.edgesuite.net.
graphics478.nytimes.com.edgesuite.net. 13964 IN      CNAME a1116.x.akamai.net.
a1116.x.akamai.net.      5    IN    A    8.17.64.78
a1116.x.akamai.net.      5    IN    A    8.17.64.24
```

graphics8.nytimes.com from T-Mobile Cell Phone

-bash ~ % traceroute 8.17.64.78
traceroute to 8.17.64.78 (8.17.64.78), 64 hops max, 40 byte packets
 1 158.15.184.10.in-addr.arpa (10.184.15.158) 2325.487 ms * *
 2 * * 178.15.184.10.in-addr.arpa (10.184.15.178) 3768.802 ms
 3 226.1.184.10.in-addr.arpa (10.184.1.226) 2230.431 ms 1706.115 ms 4265.992 ms
 4 33.96.184.10.in-addr.arpa (10.184.96.33) 3022.872 ms 2085.019 ms 1003.134 ms
 5 m8e065e42.tmodns.net (66.94.6.142) 494.165 ms 1096.573 ms 1043.394 ms
 6 209.96.184.10.in-addr.arpa (10.184.96.209) 544.710 ms 300.269 ms 520.475 ms
 7 220.96.184.10.in-addr.arpa (10.184.96.220) 460.470 ms 916.142 ms 523.900 ms
 8 * * *
 9 ge-6-20.car1.Atlanta1.Level3.net (4.79.213.49) 2439.082 ms 2411.253 ms 2501.724 ms
10 ae-27-52.car1.Atlanta4.Level3.net (4.68.103.44) 2039.606 ms 3383.729 ms 3697.863 ms
11 8.17.64.78 (8.17.64.78) 3862.096 ms 2918.443 ms 600.868 ms

dig google.com

ANSWER SECTION:

google.com.   282   IN A 209.85.171.100

google.com. 282   IN A 74.125.45.100

google.com.   282   IN A 74.125.67.100