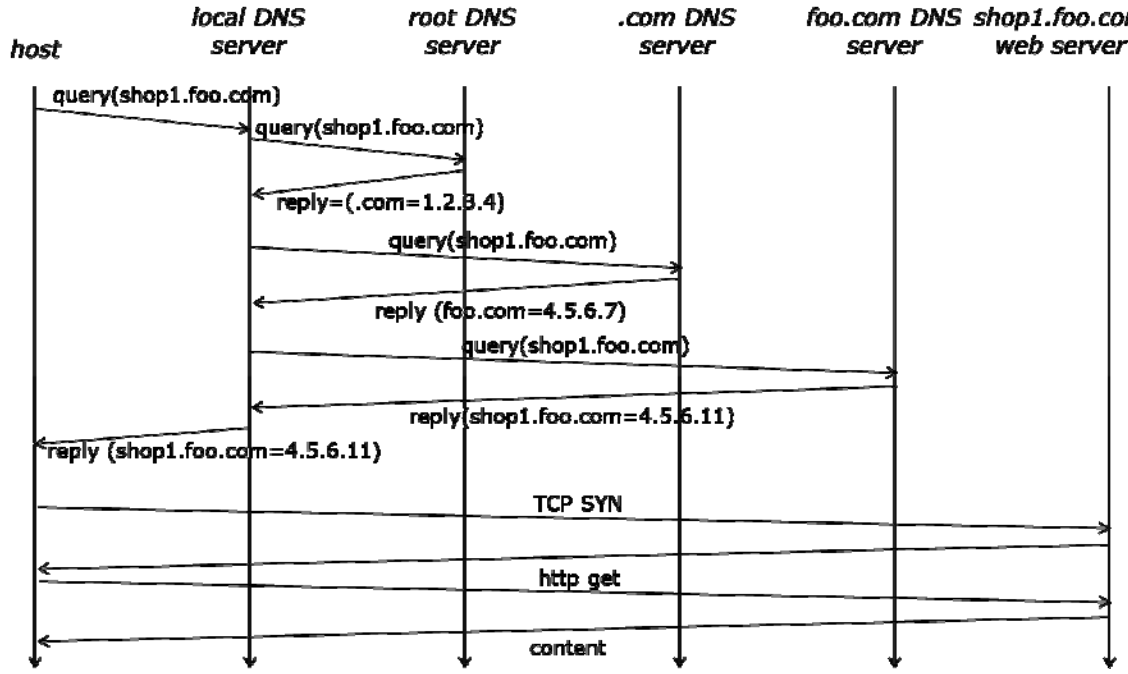
CSE 473 – Introduction to Computer Networks *Roch Guérin*

Quizz 3

Your Name: *10/02/2014*

1. (5 points total) The diagram below shows a typical DNS and http exchange, when *host* seeks to access a web page on *shop1.foo.com.*



(2 points) Assuming all caches are empty at *host* and all DNS servers, what entries are present in the cache of the local DNS server at the end of the exchange?

(1 point) What entries are present in the local DNS cache of *host*?

(2 points) Assume that the user at *host* next clicks on a link that points to *pay.foo.com.* How many DNS server will be involved to handle this new query?

2. (5 points total) Consider a connection between hosts A and B that uses the Go-back-N protocol and uses packets of size 1.5 kbytes. The RTT (including propagation and queueing delays) is 2*20 ms = 40 ms (delay from A to B and back), and the path throughput is 100Mbits/sec (10^8 bits/sec).

   (2 points) What is the minimum window size (in bytes) that would allow continuous transmissions between A and B at a rate of 100 Mbits/sec in the absence of packet errors and losses?

   (2 points) Assume now that A transmits maximum size packets, that the protocol's time-out is set to 2xRTT, *i.e.,* 80 ms (assume for simplicity that each packet has its own timer), and that the packet loss probability on the path between A and B is $p = 10^{-3}$. Under those assumptions, what is the average transmission throughput realized by the connection?

   (1 point) Under the same assumptions as in the previous question, consider now that the packet with sequence number 50 is transmitted at time t = 100ms and is lost. When will **packet 51** be delivered to the application at the receiver B, assuming no further packet losses?