CS 333: Network Security and Defense

Role-Playing Game - DNS

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1   Introduction

This in-class game is mainly used to engage students in class, and help students to understand how DNS works.

2   Rules

- Each student will act as a computer in the DNS ecosystem. There are three types of characters. One student will act like a local DNS resolver, the other students will play the role as either a DNS name server, or a web server that the client is trying to access via a browser.

- The local DNS resolver will send DNS queries to DNS name servers, and every DNS name server needs to respond. The local DNS resolver and the DNS name servers communicate based on a predefined script.

    - The local DNS resolver will ask one of the root domain servers, "xxx (replace xxx with the student's name), what is the IP address of xxx (e.g., cs.boisestate.edu)?"
    - The root domain server will respond:"I don't know, but you can ask xxx (replace xxx with the student's name), and his/her IP address is xxx.xxx.xxx.xxx."
    - The local DNS resolver will then ask the corresponding top level domain server, "xxx (replace xxx with the student's name), what is the IP address of xxx (e.g., cs.boisestate.edu)?"
    - The top level domain server will respond:"I don't know, but you can ask xxx (replace xxx with the student's name), and his/her IP address is xxx.xxx.xxx.xxx."
    - The local DNS resolver will then ask the corresponding second level domain server, "xxx (replace xxx with the student's name), what is the IP address of xxx (e.g., cs.boisestate.edu)?"
    - The second level domain server:"Here you go, his/her IP address is xxx.xxx.xxx.xxx."
    - The local DNS resolver will write the mapping on the white board - so as to emulate the behavior of recording the DNS mapping in its database (i.e., the DNS cache).
    - The web server can just be silent.