Educating the Security Workforce through On-Demand Live Competitions

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CTF in the Cloud

Live cyber-security competitions, or Capture the Flag (CTF), are an excellent tool to help teach and reinforce security concepts in the next generation of cyber-security students.

These live cyber-security competitions place a significant time and effort burden on the organizers, because as soon as an intentionally-vulnerable software is used in a competition it cannot be used again. This ephemeral nature is because the value in the intentionally-vulnerable software, similar to a puzzle, lies in the participants not knowing the location or nature of the vulnerability.

Additionally, creating a live cyber-security competition is difficult and time consuming for educators, who lack technical expertise to administer a competition.

Approach

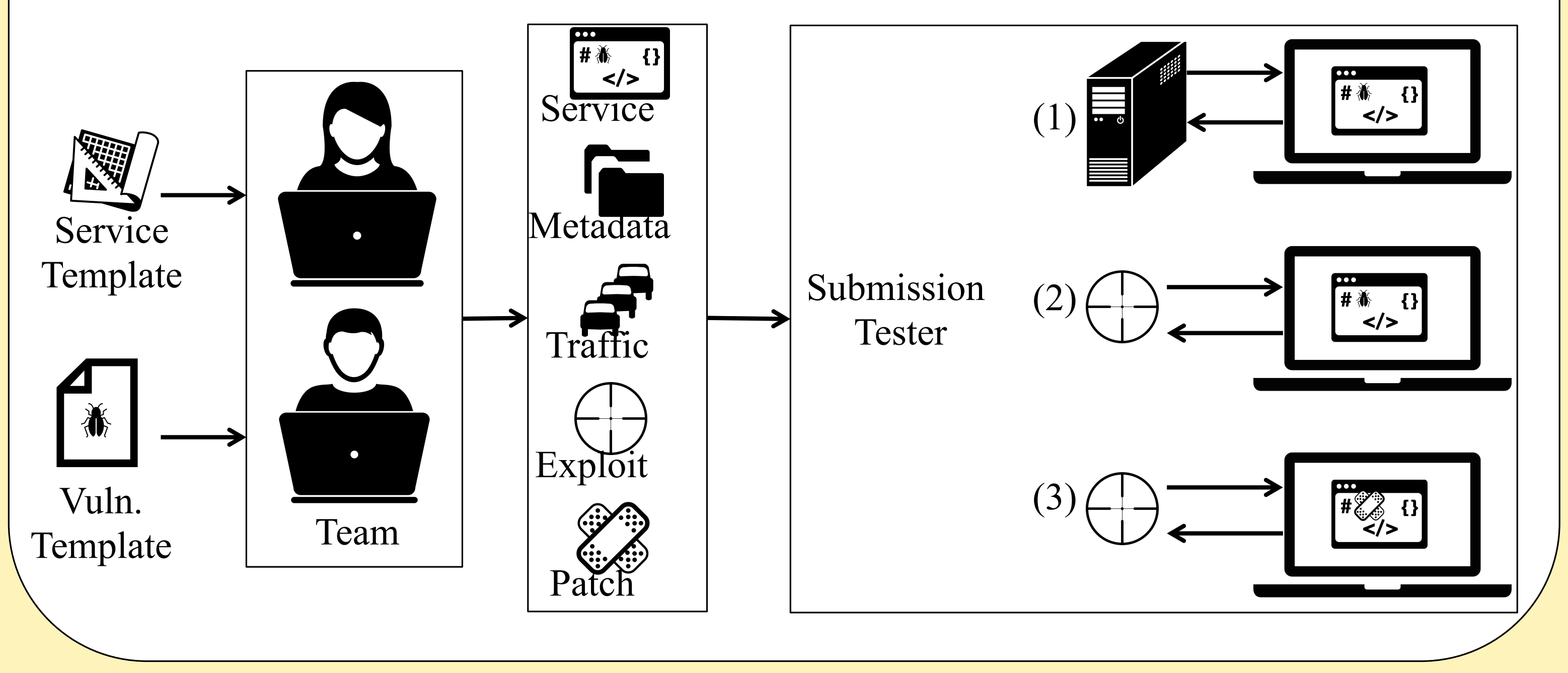
Building Vulnerable Software

- Building vulnerable software offers a unique approach to learning how to find and exploit vulnerabilities in software.
- We will build an automated service testing framework for a CTF competition where the teams create the vulnerable services.

Cloud-based CTF Hosting Framework

- We will create infrastructure for hosting live security competitions in the cloud.
- This framework will allow any educator or student, regardless of technical skills, to host their own security competition.

Automated Service Testing



March 3rd, 2017 – iCTF

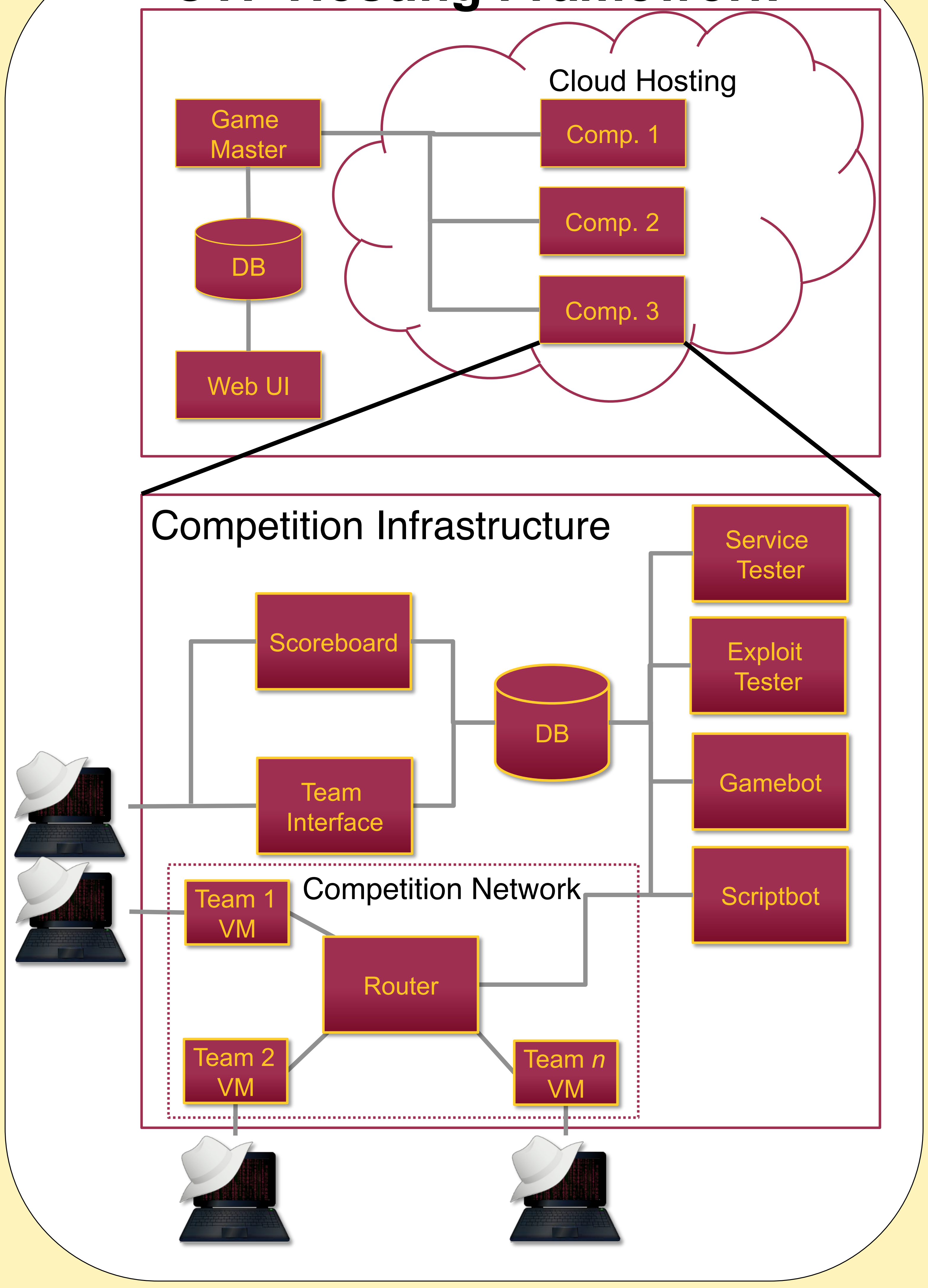
The 2017 iCTF will be hosted entirely in the cloud using the framework. After the competition, we will open the cloud hosting framework to the public.

The framework interface will be available: http://shellweplayagame.org

Expected Results

We will open-source the framework and intentionally-vulnerable software. In addition, all data from all competitions (including network traffic with annotated successful exploits and benign) will be released as a research dataset.

CTF Hosting Framework



Interested in meeting the PIs? Attach post-it note below!

National Science Foundation
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The 3rd NSF Secure and Trustworthy Cyberspace Principal Investigator Meeting
January 9-11, 2017
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