Leveraging Docker-based containers to teach cyber security

Introduction
Teaching cyber security concepts in an effective way has always been a challenging task. Practically demonstrating the security concepts, threats and attacks in action is an attractive approach. In this work, we use Docker-based containers to demonstrate and teach various security threats using hands on approach.

The Challenge
A need for practical approach to teach cyber security
- Must allow the user to visualize concepts.
- Must enable the user to ‘learn by doing’.
- Easily configurable and accessible
Cloud based
- Using elastic and scalable cloud resources
- Support large number of users if required
Operating System and Internet Browser Independent.

Our Approach
- Dockerize different security related tools and concepts
- Use a cloud-based platform to allow user access to different dockerized security tools
- Allow the users to experience the security threats and problems themselves.

Current Status
- 9 different scenarios available (more scenarios to be added).
- Accessed by users from 4 different continents

Comparative Analysis
- Our Docker-based Approach
  - Access our website through internet and use the tools.
  - User doesn’t worry about security, and resources.
- User-machine based
  - Download and install the tools
  - Risk your computer's security
  - Allocate resources so high processing power required
  - Eliminate the risk once done.

SSH Honeypot Example

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