

Using Virtualization to Create and Deploy Computer Security Lab Exercises

Brian Hay, Ronald Dodge, and Kara Nance

Abstract Providing computer security laboratory exercises enables students to experience and understand the underlying concepts associated with computer security, but there are many impediments to the creation of realistic exercises of this type. Virtualization provides a mechanism for creating and deploying authentic computer security laboratory experiences for students while minimizing the associated configuration time and reducing the associated hardware requirements. This paper provides a justification for using virtualization to create and deploy computer security lab exercises by presenting and discussing examples of applied lab exercises that have been successfully used at two leading computer security programs. The application of virtualization mitigates many of the challenges encountered in using traditional computer laboratory environments for information assurance educational scenarios.

1 Introduction

Creating authentic physical computer security scenarios is a challenging undertaking, requiring a significant commitment of time and effort on the part of the instructor and lab support personnel, but the benefits of hands-on lab experiences is an important part of computer security education. Traditional computer lab environments are typically unsuitable for computer security, information assurance, and networking research and classwork, for a variety of reasons, including a lack of network isolation, the challenges associated with the creation and deployment of scenarios,

Brian Hay, Kara Nance
Department of Computer Science, University of Alaska, Fairbanks, AK 99775,
e-mail: brian.hay@uaf.edu

Ronald Dodge
Department of Electrical Engineering and Computer Science, United States Military Academy,
West Point, NY 10996, e-mail: ronald.dodge@usma.edu

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