



Learning and Playing: Integrating Competition Experiences Into Formal Curriculum

2014 3CS
Palos Hills, IL

Discussion

- What is the NCL?
- Partnerships
- Features
- Enrichment & Assessment
- Preparation for Certifications
- Support for Players



Discussion (con't)

- Cyber Gymnasiums
- Tutorials & Video Support
- Scouting Report™
- Faculty/Coach Resources
- Future Plans



What is the NCL?

- Founded May 2011
- Provides an ongoing virtual training ground for students to develop, practice, and validate cybersecurity knowledge and skills using lab exercises aligned with individual and team games



Partnerships

- CSSIA
- Cyber Security Policy & Research Institute
- CyberWatch West
- MPICT Center
- National CyberWatch Center



Thorough Analysis of Cyber Security Issues

NCL Features

- Providing an inclusive individual and team competitive “sport” experience
- Creating a fun, experiential learning opportunity where students demonstrate skills/knowledge sets



NCL Features (con't)

- Promoting proficiency for specific cybersecurity skills
- Preparing teams for other cybersecurity exercises (e.g., National Collegiate Cyber Defense Competition)



NCL Features (con't)

- Enriching the classroom learning experience
- Promoting industry participation
- Addressing the lack of qualified cybersecurity professionals nationally



NCL as Enrichment & Assessment

- Aligning competition events to academic calendars (e.g., semesters)
- Providing a mechanism by which schools/students can assess the effectiveness of their curriculum



NCL as Certification Preparation

- Continuing the acquisition of skills tied to curriculum, industry needs, and professional certifications:
 - Security+™
 - Certified Ethical Hacking (CEH™)



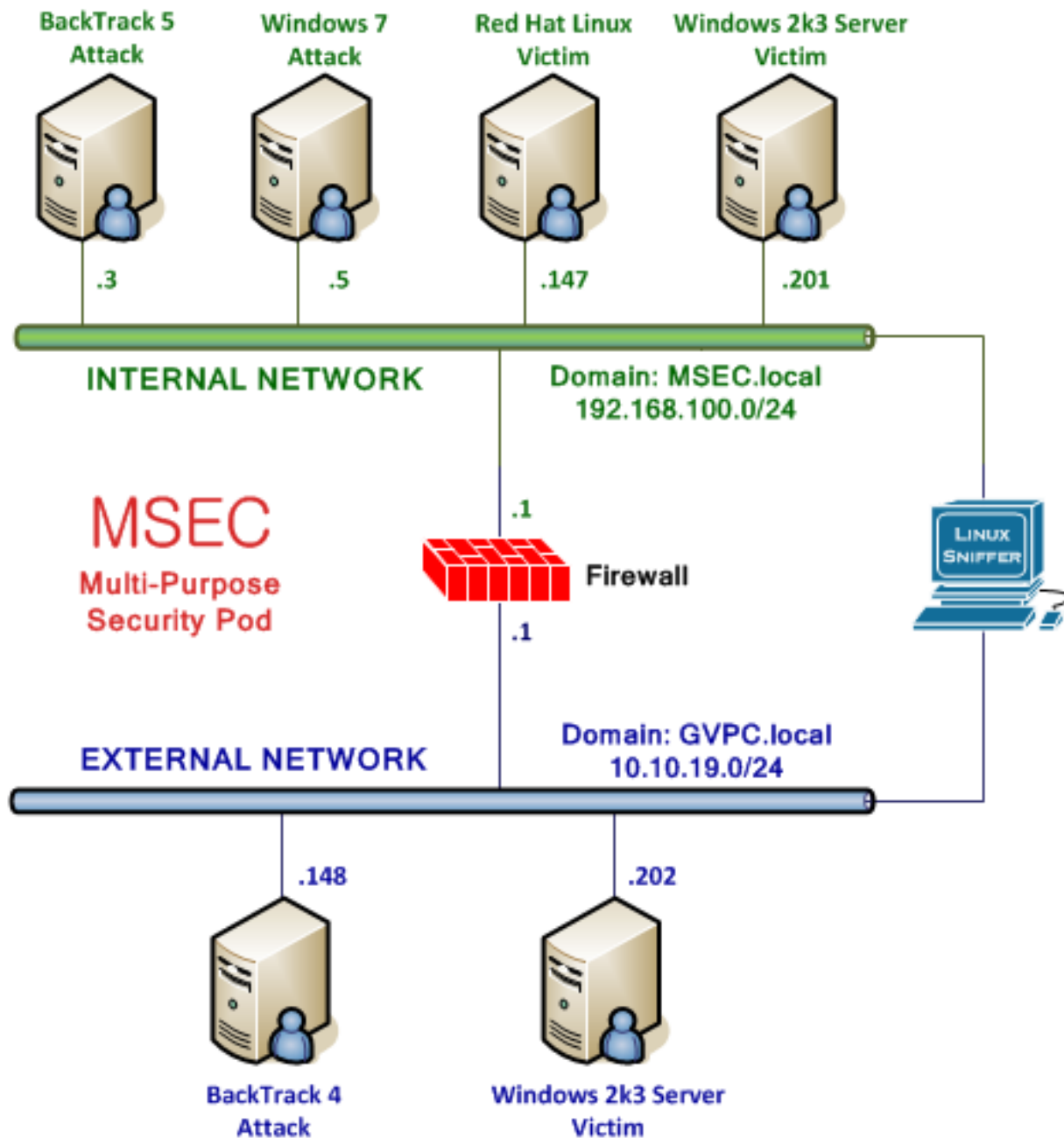
Support for Players

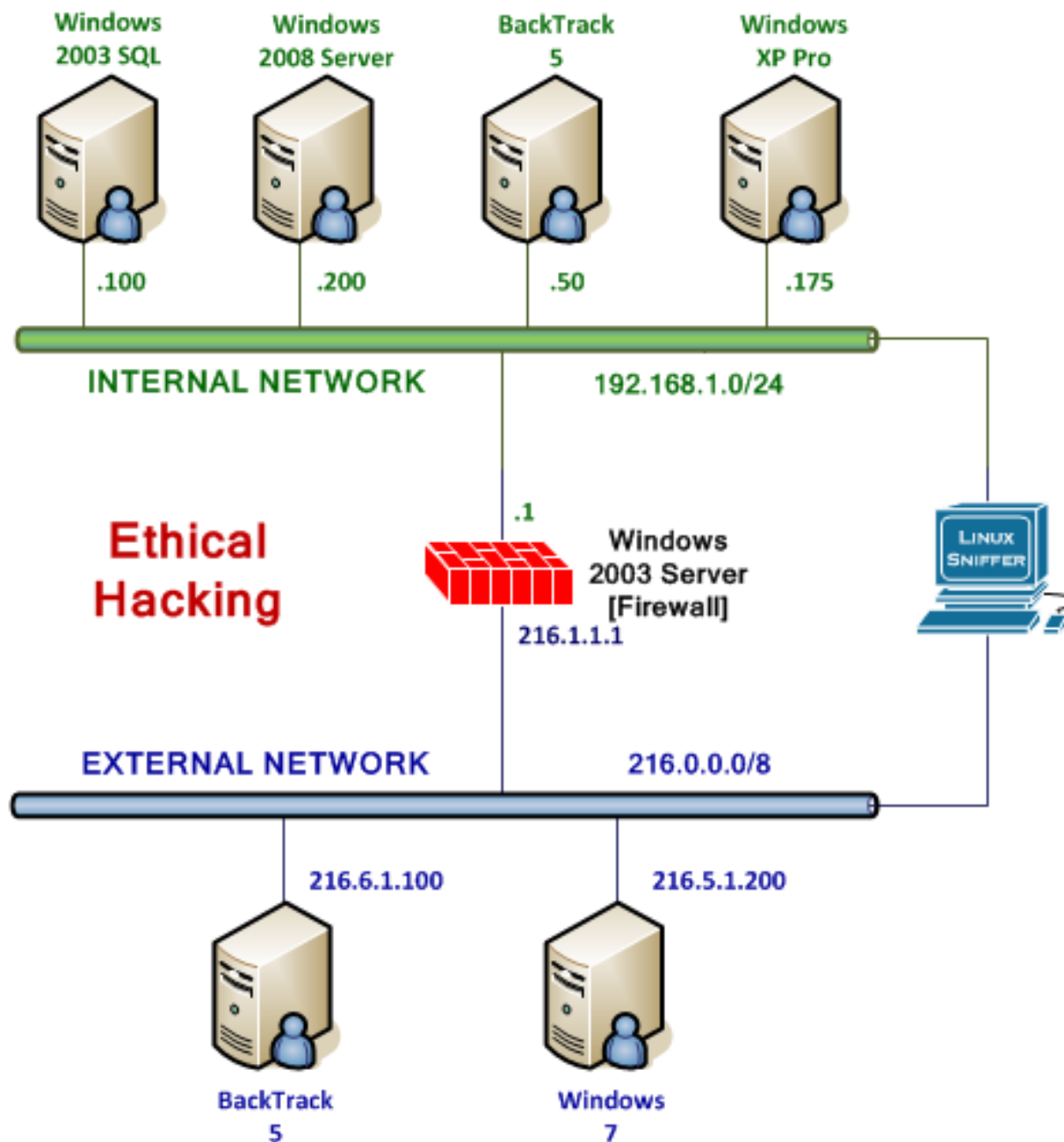
- Laboratory exercises in 24 x 7 gymnasium
- Tutorials
- Walkthrough of competition environment
- ThreatSPACE Puzzle Graveyard
- Solutions documents
- Brackets

Labs in the NCL Cyber Gymnasiums

- 24 x 7 access during the Season
- Developed with its own topology and related VMs:
 - Security+™: Multi-Purpose Security Pod (MSEC)
 - CEH™: Security Ethical Hacking pod







Tutorials & Video Support

- ThreatSPACE cyber exercise scoring and event management system tutorial and walkthrough
- Videos:
 - Preseason described
 - Q & A
 - Regular Season
 - Rules
 - Brackets
 - Technical support
 - Strategy
 - Scoring
 - Coaches
 - Spectators
 - Season review
 - Walkthrough of competition environment



ThreatSPACE Puzzle Graveyard

- Answers to 2012 NCL Fall Pilot season
Capture-the-Flag (CTF) challenges, many of
which are available in the ThreatSPACE Puzzle
Graveyard



Scouting Report™

- Individualized report documenting how players performed relative to other players nationally and in their region
- Includes:
 - Player statistics
 - Conference and national rankings
 - Skills validation metrics



Scouting Report™ Excerpt

Conference Championship

The highest overall Conference Championship score nationally was 49,760, with 111 total flag captures out of 134 flag attempts and a 82.84% overall accuracy rate by a Gold Bracket team, Team Midwest, from Franklin University

Bracket	Conference Rank	Total Score	Total Flag Captures	Total Flag Attempts	Accuracy
Bronze	4	10,560	64	91	70%



Faculty/Coach Resources

- Preseason assessment/game
- Lab exercises
- Syllabi
- WebEx sessions & YouTube videos



Preseason Assessment/Game

- Measures player's skills prior to Regular Season games:
 - Brackets based on skill level to encourage players with varying knowledge, skills, and abilities to participate



39 Lab Exercises

Lab Title	CSSIA CompTIA Sec + Domain	Tasks Included
Network Devices and Technologies - Capturing Network Traffic	Network Security	<ul style="list-style-type: none">• Using tcpdump to Capture Network Traffic• Capturing and Analyzing Traffic with Wireshark• Capturing and Analyzing Traffic with Network Miner
Secure Network Administration Principles - Log Analysis	Network Security	<ul style="list-style-type: none">• Log Analysis in Linux Using Grep• Log Analysis in Linux Using Gawk• Log Analysis in Windows Using Find
Protocols and Default Network Ports - Transferring Data Using TCP/IP	Network Security	<ul style="list-style-type: none">• Using Hyper Text Transfer Protocol (HTTP) to Transfer Files• Using Fire Transfer Protocol (FTP) to Transfer Files• Transferring Files Securely Using SCP



Syllabi

- Available for Security+™ and CEH™
- Sequenced with competition tasks



The National Cyber League - Where Cybersecurity is a Passion

Suggested Schedule

The following suggested schedule maps the Security+ Guide to Network Security Fundamentals, 4e textbook chapters with the corresponding NCL lab exercise(s) and NCL Games:

Suggested Schedule (game dates subject to change)
Chapter 1: Introduction to Security
Chapter 2: Malware and Social Engineering Attacks
Chapter 3: Application and Network Attacks --Lab 8: Analyze and Differentiate Types of Attacks Using Windows Commands --Lab 7: Analyze and Differentiate Types of Malware --Lab 9: Analyze and Differentiate Types of Application Attacks (Tasks 2-4) --Lab 12: Discovering Security Threats and Vulnerabilities (Task 3) --Lab 13: Importance of Data Security - Data Theft --Lab 6: Incident Response Procedures (Task 1)
Chapter 4: Vulnerability Assessment and Mitigating Attacks --Lab 12: Discovering Security Threats and Vulnerabilities (Tasks 1-2) --Lab 11: Mitigation and Deterrent Techniques - Password Cracking --Lab 1: Network Devices and Technologies - Capturing Network Traffic
10/19/13 Regular Season: Game #1 (Prerequisite: Mandatory Pre-Season 10/07-10/13)
Chapter 5: Host, Application, and Data Security --Lab 10: Mitigation and Deterrent Techniques - Anti-Forensics --Lab 2: Secure Network Administration Principles - Log Analysis

www.NationalCyberLeague.org



WebEx Sessions & YouTube Videos

- Train coaches
- Q & A
- NCL YouTube Channel:

www.youtube.com/user/NationalCyberLeague



Future Plans

- 2014 Fall Season
- Continued proving the NCL model
- Season subscription (NCL Course Pack™)
- Continued integration in classes
- New hosted lab content (e.g., Linux+)
- Skills validation



Q&A



Contact Information

- www.NationalCyberLeague.org
- info [at] nationalcyberleague [dot] org
- @NatlCyberLeague

