The National Cyber League – Where Cyber Security is a Passion

Instructions for Preparatory Lab Exercises

2015 Fall Season
September 2, 2015

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Overview

The National Cyber League (NCL) mission is to offer engaging, entertaining, measurable, and scalable methods of learning to enlist a new generation of cyber security professionals. More details concerning the NCL, its history and goals, may be found at

www.nationalcyberleague.org

The structure of the Fall Season is twofold – preparatory exercises and cyber games. The preparatory exercises comprise two groups of individualized labs - akin to conditioning in athletics - based on the CompTIA Security+ performance-based exam objectives, and EC-Council Certified Ethical Hacker (CEH)™ performance-based exam objectives. There are a total of 39 labs. Availability of lab exercises is from
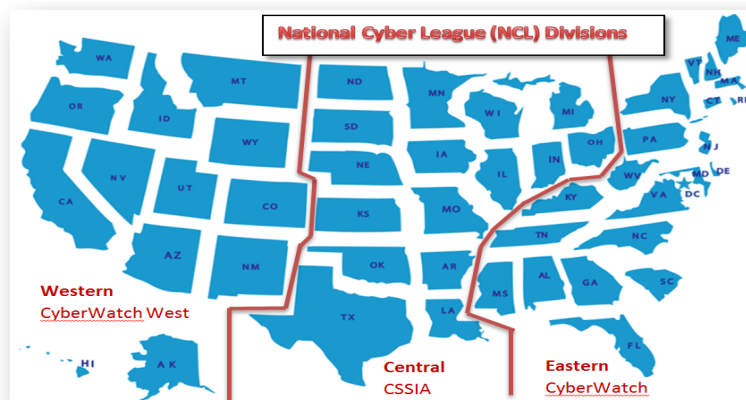
October 6 through December 18, 2015.

Thus the lab exercises will be available throughout the 2015 Fall Season.

This document specifically addresses where to find and access the preparatory exercises for Fall Season participants.

NCL Conferences or Divisions

The NCL is organized in Conferences or Divisions as shown in the following graphic:

2015 Fall Season Preparatory Exercises

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Preparatory Exercises for the NCL 2015 Fall Season have been specifically designed for use within one of several remotely accessible Cyber Stadiums/Gymnasiums powered by NDG NETLAB+™ encompassing virtualized systems. Each Preparatory Exercise has been developed for either the Multi-Purpose Security Pod (MSEC) topology for Security+, or the Ethical Hacking topology. Access to specific Preparatory Exercise documentation is provided within the respective Cyber Stadium/Gymnasium.

Registrants accessing NCL Preparatory Exercises must attend an institution of higher learning which participates in the Microsoft DreamSpark program.

The 20 Security+ exercises are as follows:

1   Network Devices and Technologies - Capturing Network Traffic
2   Secure Network Administration Principles - Log Analysis
3   Protocols and Default Network Ports - Transferring Data Using TCP/IP
4   Protocols and Default Network Ports - Connecting to a Remote System
5   Secure Implementation of Wireless Networking
6   Incident Response Procedures
7   Configuring the pfSense Firewall
8   Configuring Backups
9   Analyze and Differentiate Types of Malware
10   Analyze and Differentiate Types of Attacks Using Window Commands
11   Analyze and Differentiate Types of Application Attacks
12   Mitigation and Deterrent Techniques - Anti Forensic
13   Mitigation and Deterrent Techniques - Password Cracking
14   Discovering Security Threats and Vulnerabilities
15   Importance of Data Security - Data Theft
16   Importance of Data Security - Securing Data Using Encryption Software
17   Authentication, Authorization and Access Control
18   Access Controls
19   General Cryptography Concepts
20   Cryptography

The 19 Ethical Hacking exercises are as follows:

1   Using Active and Passive Techniques to Enumerate Network Hosts
2   Conducting Active and Passive Reconnaissance Against a Target
3   Using the SYSTEM account
4   Poison Ivy – Remote Access Trojan

5	Using the SHARK Remote Administration Tool
6	Utilizing Malware - Dark Comet
7	Breaking Windows Passwords
8	Using John the Ripper to Crack Linux Passwords
9	Using Spear Phishing to Target an Organization
10	Breaking WEP and WPA Encryption
11	Using Metasploit to Attack a Remote System
12	Using Armitage to Attack the Network
13	Exploitation with IPv6
14	Creating MSFPAYLOADS
15	Abusing SYSTEMS
16	SQL Injection
17	Launching a Buffer Overflow
18	Intrusion Detection
19	Using Certificates to Encrypt Email

In addition to availability within the NDG NETLAB+™ environment, Preparatory Exercise documentation is available at,

www.cssia.org

under Resources.   Additional documentation at cssia.org augments the set of Preparatory Exercise documentation, including a suggested order of completion. Account registration is required to access CSSIA resources, and is free of charge. Review of the Preparatory Exercise documentation prior to accessing a Cyber Stadium/Gymnasium is recommended. Participants might also elect adapting the exercises to local resources, or even building a similar topology.

Access to a Cyber Stadium/Gymnasium may be made with a wide variety of web browsers. Initially, all exercises will be available at,

midwest.nationalcyberleague.org

Check the NCL website for updated information regarding Cyber Stadium/Gymnasium availability. All Cyber Stadia are available to all student participants as they come online.
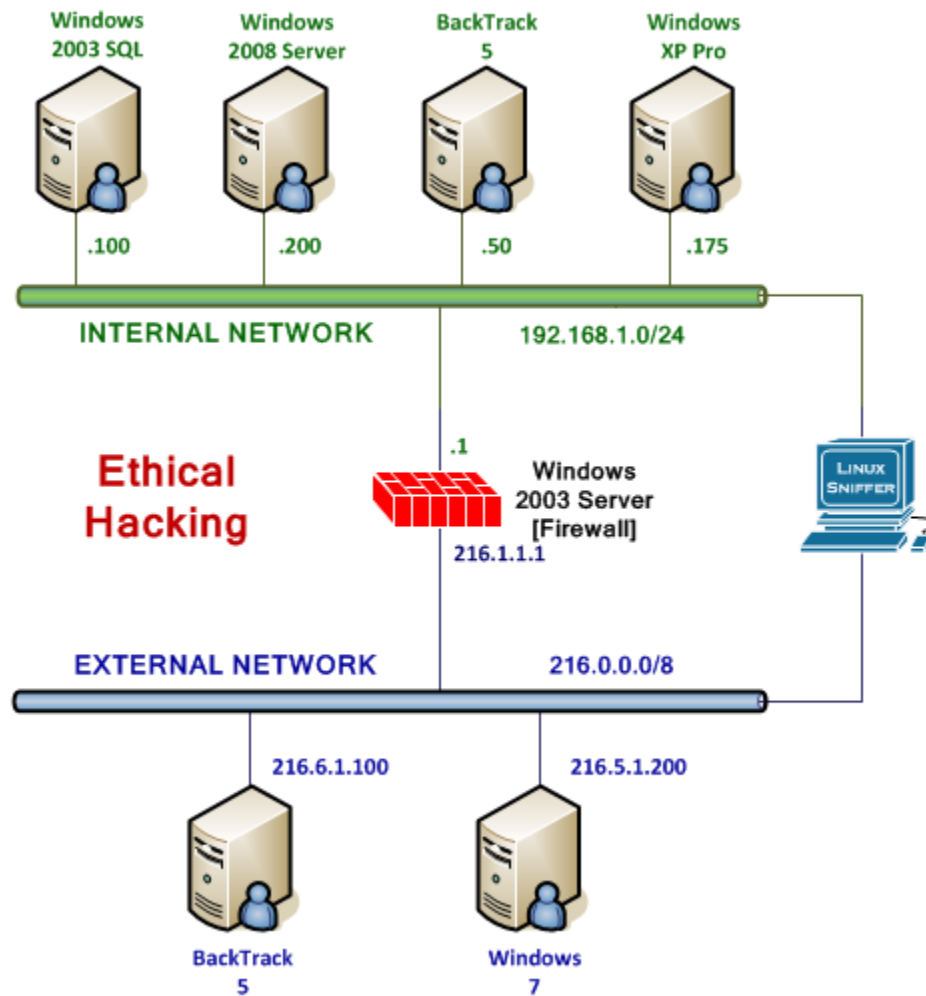
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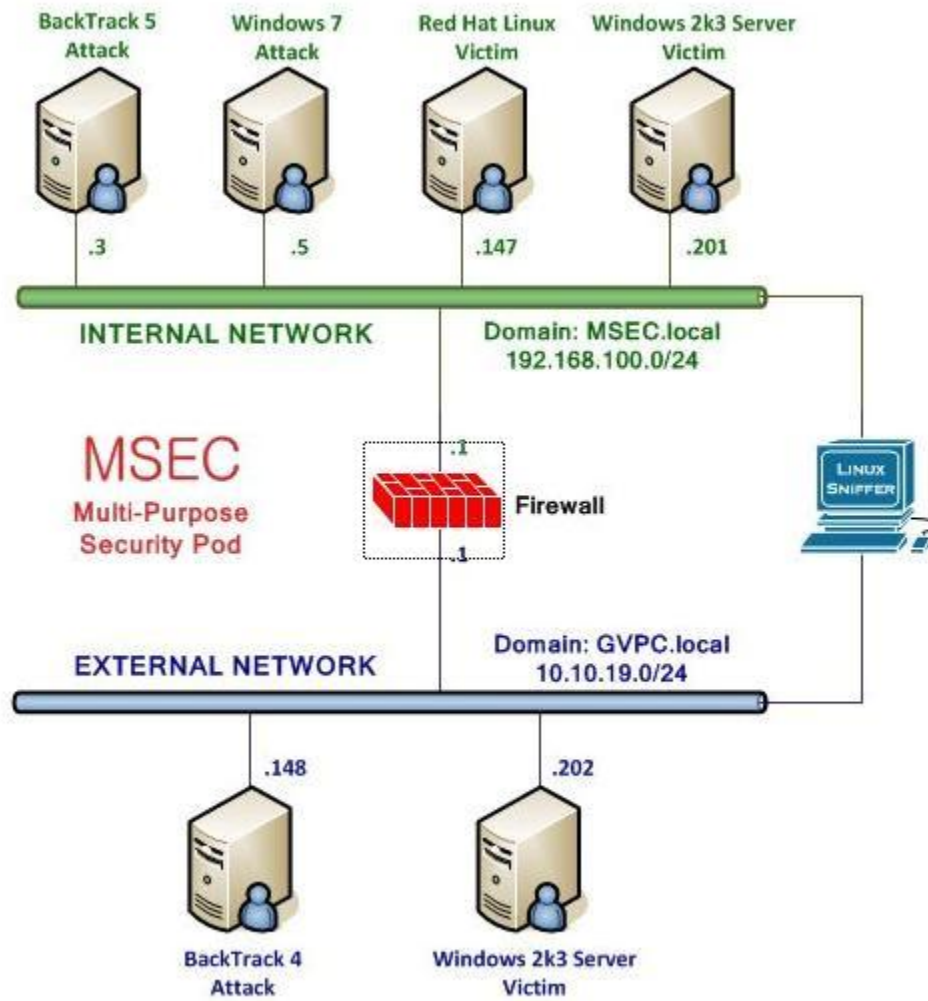
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Participants should be aware of specific client and internet connection requirements stipulated by Network Development Group, located,

www.netdevgroup.com/products/requirements/

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Access & Scheduling of Preparatory Exercises

Each registrant will be notified of an assigned a username common to all accessible Cyber Stadiums.

On initial authentication, you will be prompted to change your password. Please document and remember your password!

Once authenticated, **MyNETLAB** page will appear, similar to the following graphic, depending on specific Cyber Stadium implementation and user privileges.

From the **MyNETLAB** page you can enter a pod if scheduled, or schedule lab access. **Note that access times are self-scheduled.**

Scheduling lab times on a Cyber Stadium is very easy and intuitive via the NDG NETLAB+™ system. Click on the Scheduler icon or menu option to enter the scheduler.

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Once in the Scheduler, you should see your assigned classes, here shown as 2015 NCL EH and 2015 NCL Security+. Specific class names may be somewhat different on other Cyber Stadia. Click on your assigned Class, and **Reserve lab time for yourself**. You will be presented with the list of Preparatory Exercises enumerated above for Ethical Hacking and Security+ respectively. Choose which Preparatory Exercise you wish, and select the day/time on the next page. All respective MSEC/ Ethical Hacking pods will be available to all students on each of the Cyber Stadiums. You will see a mix of open and scheduled times. Note that you can work on any ethical hacking exercises from any of the ethical hacking pods. The same is true for Security+.

You may choose one, **two hour time slot** to work on a particular Preparatory Exercise. The NDG NETLAB+™ system Scheduler is very flexible, allowing time selection in half hour increments. Since this is a shared system, it is recommended that **start times should be even hours of the day**.

Available resources will functionally allow students to schedule more times on more pods within a Cyber Stadium, and additional time on other Cyber Stadia as well. This

capability is offered to students to maximize availability. Within this capability, students are urged to schedule sensibly to allow access to others.

This will allow all participants generous time to complete all exercises. Scheduled times and system use will be tracked. The NCL reserves the right to disable a student account for violating the scheduling policy by over scheduling multiple pods or systems.

Once scheduled, lab reservations appear on the **MyNETLAB** page, always accessible via the MyNETLAB menu option.

Click on **ENTER LAB** to access the MSEC Security Pod or the Ethical Hacking Pod. You will see the appropriate topology as shown above. All VMs, the firewall and Linux Sniffer are hot spots used to access these respective systems. Documentation for the specific Preparatory Exercise can be accessed via **SHOW LAB CONTENT**. Follow the instructions contained in the lab documentation.

Support

The NCL makes every effort to provide high quality Cyber Stadium/Gymnasium performance, system integrity, and accurate lab documentation. Nevertheless, the participant may encounter various difficulties while performing Preparatory Exercises within the Cyber Stadium/Gymnasium environment. These may be,

- Access Problems – unable to access the Cyber Stadium, or slow response
- Technical Difficulties within the Cyber Stadium
- Difficulty in executing the specific Preparatory Exercise, or understanding the documentation

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<u>For access problems</u>, technical support should be sought from the IT staff at the local institution, or the service provider if accessing from home. Recall that ports 80, 2201 should be open. Refer also to client requirements,

www.netdevgroup.com/products/requirements/

<u>For technical difficulties</u> within the Cyber Stadium, including loss of password, send an email to the technical support contact.

support@nationalcyberleague.org

<u>For difficulty in executing the specific Preparatory Exercise </u>assistance should be sought from the Advisor or another instructor. This includes difficulties in using the NDG NETLAB+™ system.