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Applied Computing

Wales Institute of Science and Art (WISA)

Networks and Cybersecurity Essentials (ACCA4024)

Lab 7: Tools to check on Threats and Vulnerabilities

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Objectives

Using Packet Capturing tools and network monitoring tools.

Tasks

1. Use Nmap to scan
2.

Required Resources

- PC with Ubuntu 16.0.4 LTS installed in a VirtualBox or VMware virtual machine. (*Alternatively*, Any Linux Platform)
- Internet Connection to refer the outcomes
- References: https://nmap.org/

Task 1

➔ Login as User Cisco.

➔ Go to Terminal and Type the following commands and examine

- To do that we are using Nmap.
  - Network Mapper, or Nmap, is an open source utility used for network discovery and security auditing. Administrators also use Nmap for monitoring hosts or managing service upgrade schedules.
  - Nmap determines
    - what hosts are available on a network,
    - what services are running,
    - what operating systems are running,
    - What packet filters or firewalls are running?
- So, basically if you could get all the above details using Nmap, you could get few information which could be used later in performing attacks or mitigating attacks.

➔ Commands to execute

- Step 1:
  - **nmap localhost**

  (This is a scan performed to get information about the services that are bound to the localhost)

- Step 2:
  - **Replace the above command with your IP Address and other hosts (if connected/ else ignore) in your network to check the outcomes.**

Type the command you used to find out your host IP Address

Type the command you used to scan after finding your host IP Address

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Record the outcomes of the above command here

- Step 3: Analyse the outputs/outcomes from Step 1 and 2 and record your reflections. (Hint: Analyse what is the difference between local host and ip address of the host, If ports displayed are different, Why is it different? etc (not limited to the hints))

- Step 4: Why is the nmap scan only scans the first 1000 ports? What will be the command to scan all the ports?

- Step 5: Scan the UDP Ports
  - **nmap –sU localhost**

    (This is a scan performed to get information about the UDP ports and to execute this command you need root privileges. So, try)

  - **sudo nmap –sU localhost**

Record the outcomes of the above command here (Hint: what UDP ports could you find open through your scan)

- Step 6: From the above outcomes select any ports which is open
  - **sudo nmap –p137 localhost**

    (Change the port number 137 to any port which you found as open in the previous step (5).)

Record the outcomes of the above command here (Hint: Is the port open or closed? Why? Also, record the use of –p command)

- Step 7: Try other port related commands and record its purpose.
  - **sudo nmap –p***portnumber host_ip*
  - **sudo nmap –p***portnumber_startrange-portnumber_endrange host_ip*
  - **sudo nmap –p***portnumber,portnumber host_ip*

- not limited to the above *(Do a google search, refine your search and find out other port related commands, Hint:nmap.org)*

Record the outcomes of the above commands here

- Step 8: Detecting the version is a very important part of information gathering. Try to find out the version.
  - **nmap –sV localhost**

Record the outcomes of the above commands here

- Step 9: Try other commands to detect other versions and record its purpose.
  - Command to identify the Operating System version

Record the outcomes of the above commands here

- Command to identify the Service Version

Record the outcomes of the above commands here

Learnings from tutorials so far:

Part 1 (Packet Tracer, Host Machines)

- ✓ ***Build a home Network***
- ✓ ***Understand and configure IP Address***
- ✓ ***Use Ping/ Trace route Utility to check the connection status***
- ✓ ***Use ipconfig /all command to determine the MAC address of a Windows computer on an Ethernet network.***
- ✓ ***Analyze a MAC address to determine the manufacturer.***
- ✓ ***Analyze the Wired and Wireless Network connection.***
- ✓ ***Analyze Address Resolution Protocol (ARP).***
- ✓ ***Connect to a Wireless Router and configure the basic settings in a wireless router and add security features.***
- ✓ ***Use nslookup command to understand the url to ip conversion.***
- ✓ ***Configure basic connectivity settings in Intermediate devices (Switch/ Router).***
- ✓ ***Work with SBA Packet Tracer Files/ environment***
- ✓ ***Configure ftp, web, email, dns, ntp and aaa Servers***

Part 2

- ✓ ***Set up a virtual lab environment***
- ✓ ***Troubleshooting the virtual lab environment***
- ✓ ***Working with virtual machines***
- ✓ ***Authentication, Authorization and Accounting***
- ✓ ***Threats and Vulnerabilities – Using NMAP***